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SYMPOSIUM—TUBERCULOSIS OF THE UPPER AIR PASSAGES

TUBERCULOSIS OF THE NARES.*

BY CHARLES H. KNIGHT, M.D., NEW YORK.

If the tubercle bacillus be the source or the vehicle of contagion, if it be capable of invading the organism through a break in the protecting epithelium, or even through a mucous membrane still intact, the nasal fossæ, the entrance of the air passages, might be expected to show the first evidence of its attack. Precisely the contrary is the fact, the researches of Willigk, for example, discovering only one case of nasal tuberculosis in 476 autopsies on tubercular subjects. In 1882 Weichselbaum reported two nasal cases in 146 autopsies, and in a series of 470 nasal tumors Schäffer (1887) found six tubercular granulomata. Clinically the discrepancy is much greater, because the nasal lesion is usually secondary to a more important pulmonary involvement and hence may be overlooked. This immunity of the nasal mucosa is perhaps explained by the existence in the secretion of the Schneiderian membrane of some quality antagonistic to morbid germs. (Würtz and Lermoyez, 1889). That an antitoxic property in nasal mucus is not peculiar to the human race is indicated by an interesting "case of supposed nasal tuberculosis in a monkey" observed by E. L. Shurly. A free purulent nasal discharge contained numerous tubercle bacilli which disappeared under treatment and recurred when treatment was stopped. The animal was finally killed with the expectation of finding characteristic signs of tuberculosis. On the con-

* Contribution to a Discussion on Tuberculosis of the Upper Air Passages, held at the New York Academy of Medicine, April 17, 1904.

trary no typical lesion or infiltration could be discovered either in the nose or any organ. The means of protection thus provided by nature may account for the rarity especially of primary nasal tuberculosis. Only twenty primary cases have been enumerated by Herzog and the great majority of eighty cases collected by Cartaz were secondary. The former is doubtless caused by direct inoculation of an eroded surface, or, as demonstrated by Renshaw (1901), virulent bacilli may penetrate an unbroken mucous membrane. Secondary deposits are believed to be due to the conveyance of bacilli or toxins through the lymph channels, or less frequently by the blood current, to their point of development. The infrequency of generalization by way of the meninges, Demme's case of tuberculous meningitis in a child with "ozena" being unique, is accounted for by the fact that the flow of lymph is *from* the brain *toward* the nasal cavities.

In this connection the investigation of the bacteriology of the healthy nose and the relation of so-called "ozena," or atrophic rhinitis to pulmonary tuberculosis are of interest. The results of studies made by St. Clair Thomson and Hewlett are somewhat at variance with those obtained by certain of their predecessors in a similar line. According to these observers pathogenic microorganisms are rare within the nasal fossæ proper, as a rule being caught by the vibrissæ in the vestibule of the naris where they are found in great number. Their conclusion that nasal mucus possesses bactericidal power is not fully accepted by Park and Wright (1897) although they admit that it is a poor culture medium for bacteria. The latter explain the scarcity of bacteria in the nose by this circumstance as well as by the irrigating effect of secretion from the roof of the nasal cavities, by the action of the cilia in repelling intruders, by the filtering function of the vibrissæ, and finally by the fact that "ordinarily the inspired air contains very few pathogenic germs," that is, those accustomed to grow in the fluids of the body.

The coincidence of nasal atrophy and pulmonary tuberculosis is a matter of common observation. Alexander, of Berlin, quoted by Freudenthal, found twenty-two cases of consumption among fifty of "ozena," while Freudenthal himself, in examining 340 inmates of the Bedford Sanatorium for Consumptives discovered a surprisingly large proportion suffering from "dry and atrophic conditions in the nose." Ingals believes that a catarrhal process, with the possible exception of atrophy, does not favor tubercular disease. Observations like the foregoing are apt to meet with contradiction, and accordingly we find Liaras (Thèse de Bordeaux, 1899), on the ground of only two cases of tuberculosis in fifty-two of "ozenatous rhinitis," advancing the positive opinion that these diseases are not likely to co-exist.

This writer is evidently of combative temperament, since in addition he proceeds to demolish the theory of Würtz and Lermoyez as to the antiseptic power of nasal secretions and the views of Straus as to the frequency of tubercle bacilli in healthy noses. Although his deductions may not have sufficient foundation it seems reasonable to infer that the physical state predisposing to tuberculosis, or the resulting malnutrition, provokes the intranasal degeneration, rather than the reverse.

It is said that Morgagni was the first to describe a tubercular nasal ulceration, while Laveran in 1876 observed two cases during life, and to Riedel in 1878 is attributed the first recorded case of *primary* nasal tuberculosis. Since that time a number of instances have appeared in medical literature. In 1887 Cartaz reported eighteen cases including one of his own. In 1889 Bosworth could find only twenty-seven cases and seven of these he discarded as being based on incomplete evidence. Four cases of tubercular ulcer of the septum and one of the turbinate were put on record by Michelson in 1889, and in the following year Plicque claimed to have discovered forty published cases. The same year (1890) Olympitis published thirty-nine cases, nineteen of which were certainly and four probably primary, the remainder being undoubtedly secondary. In 1883 J. W. Farlow reported two cases of tuberculosis of the septum, in one the turbinate also being involved, without pulmonary signs. In one which recovered after curetting and cauterization, the diagnosis was based upon clinical history, no bacilli being found. The other was proved to be tubercular by careful microscopical examination. In the same year Chiari reported six cases of tubercular tumor of the septum, three without pulmonary signs. In 1901 the whole number of reported cases was 108 and a few have since been added.

It is difficult to give a description of nasal tuberculosis that will enable one to identify it unfailingly. It is most likely to be confounded with lupus and syphilis. In distinction from lupus we rely chiefly upon the insensitiveness of the tubercular nodules and the absence of a tendency to spontaneous repair after ulceration has been established. The serpiginous progress of a lupoid ulcer is diagnostic. Yet their resemblance is often so striking as to justify the assumption that lupus is really a superficial form of tuberculosis. By at least one authority (E. F. Ingals) the opinion is held that "although the tubercle bacillus is the cause of both lupus and tuberculosis of the nasal passages the clinical features and pathological findings are different." In his "Atlas der Nasenkrankheiten" Krieg describes nasal tuberculosis as "lupoid" and "non-lupoid" and gives the details of one

case, particularly interesting in this connection, of "tuberculosis of the septum (lupoid form) representing an intermediate stage to tuberculous tumors." At a meeting of the British Laryngological and Rhinological Association in 1892 Lennox Browne, in describing a case of "Hypertrophic Rhinitis with old history of Lupus," quotes the report of the microscopist, Wyatt Wingrave, as suggesting that "the nature of removed tissue was that of a low type of tuberculosis." The practical identity of lupus and tuberculosis being admitted, the difference in their symptomatology being rather one of virulence or intensity, and the treatment of either being the same the question naturally arises why should they continue to be regarded as independent diseases. From syphilis, with its proneness to simulate almost every other disease and in view of its demand for a totally different mode of treatment, the diagnosis is more important and often more difficult. The chief point of difference is that tuberculosis almost never involves the bony framework of the nose and but seldom the cartilage. It would be unfortunate if we were forced to await such differential signs as this, and often a tentative course of specific treatment will promptly clear up a doubtful case. In all therapeutics there is no more striking phenomenon than the rapid melting away of syphilitic deposits under potassium iodide. It is by no means unusual to witness improvement in tubercular cases also from the use of the iodide, but the change for the better is soon arrested and in most cases the effects of the drug are indifferent or harmful. It is a common occurrence for syphilis and tuberculosis to present similar objective appearances, and not infrequently different observers are equally positive that a given lesion is lupoid and syphilitic. The former is exemplified by two cases reported by William Lincoln and the latter in a recent discussion before the Berlin Laryngological Society.

It seems proper to recognize in the nose as elsewhere two stages of tuberculosis, that of infiltration and that of ulceration. We meet with the former as a diffuse condition or as a circumscribed tumor, neither of which presents any diagnostic features. Even a microscopic examination of the secretions or of the tissue itself may be inconclusive, if tubercle bacilli cannot be found. They are sometimes absent from a lesion undoubtedly tubercular and they may be found in the air track of an individual perfectly healthy. The nasal secretions of twenty-nine attendants all in good health examined by Straus at one of the Paris hospitals (1894) showed tubercle bacilli, while in 1892 Heryng reported ten cases of nasal tuberculosis in only five of which bacilli were detected. Ulceration is generally secondary to infiltration. It may assume the appearance of what we are accus-

tomed to regard as a typical tubercular ulcer, that is, a pale, grayish, granular surface with irregular, "worm-eaten" borders often thickened and dotted with translucent or opaque miliary tubercles, or it may be disguised by a profuse proliferation of exuberant granulations. The latter phase is sometimes so pronounced as to lead to the formation of a vegetating (G. Prota, *Arch. Ital. di Laryngol.*, Jan. 1900) or fungoid mass of vascular tissue which obstructs the nostrils, gives rise to considerable viscid and offensive secretion and bleeds readily when irritated. Free hemorrhage is sometimes a marked symptom. Many authorities speak of the primary tubercular lesion as an "ulcer." It is more than likely that in every case there is a preliminary stage of infiltration, the ulcer resulting from disintegration of more or less extensive tubercular foci. According to Bosworth a tubercular ulcer presents certain characteristic features which distinguish it, but as to the nose he qualifies the assertion by adding that here the diseased process is obscured by irritation and discoloration due to impurities in the inspired air. The ulcer is said to be most often seen on the septum and may result in perforation. The statement that a turbinate body is the favorite site of a tubercular tumor seems to be erroneous since in all of eight cases observed by Schäffer and Nasse (1887) the tumor sprang from the nasal septum. In a case reported by Juffinger in 1889 a tubercular tumor was removed from the right side of the septum with the galvano-cautery. Several recurrences required further operations. Chiari's six cases have already been mentioned. On the other hand in Herzog's table of eighty cases, ten being original, published in 1893 are included twenty of tumor and eight of mixed character in several of which the attachment of the tumor to a turbinate body is especially noted. This list covers all forms of tuberculosis and shows the septum to have been involved fifty-three times and a turbinate body fourteen times. As regards the site of nasal tuberculosis the septum, the inferior turbinate and the middle turbinate is the order of frequency (Steward). The last, as in a case reported by A. Bronner, is exceptional. The disease may start on the septum and creep across the floor of the nose to the turbinate, as portrayed by Grünwald in his Atlas. It may invade the nose from the pharynx or the palate, or again it may extend from the nose to the lachrymal duct and the eye, as in five out of nine cases reported by Kinsberg. The tubercular tumor is described as a round, irregular, or even granular body, sessile or pedunculated, grayish, or grayish-yellow in color, insensitive and rather vascular. It may be of any size up to that of a "bantam's egg" (G. Macdonald). In a case reported by C. F. Theisen in 1898 a

tumor as large as a cherry removed with the cold snare from the cartilaginous septum had a broad base, an irregular surface and on section showed numerous bacilli. In his Atlas Gerber figures an example of nasal tuberculosis in which the septum is occupied by a mass of nodules of various sizes and at two places the cartilage has been perforated. As a rule the patient succumbs to general tuberculosis before extensive loss of tissue has been effected. In the event of unusual damage to nasal structures there is reason to suspect mixed infection, as in a case reported by de Santi, in which loss of the whole septum and of the greater part of the turbinates from syphilis seems to have been erroneously ascribed to tuberculosis. In his "Manual of Diseases of the Throat and Nose" Morell Mackenzie refers to two cases of large perforation of the septum "which may possibly have resulted from tubercular ulceration." He states that he has never seen a case of nasal tuberculosis, but admits that the disease may sometimes have escaped his notice. In one of Greville Macdonald's cases "extreme pallor" of the mucous surface was noticeable, and the same authority mentions that the color of a tubercular tumor may vary from "a gray to dark purple." From the diverse descriptions and symptoms of the disease the diagnosis of nasal tuberculosis appears to be attended by difficulties and in most cases must depend upon other than local manifestations.

There is general agreement that the prognosis, except in lupoid cases, is bad, possibly on the principle sustained by Hunter Mackenzie and others that the higher in the air track the localization of the bacillus the more unfavorable the outlook.

The treatment may be summed up as follows: The morbid deposit if circumscribed and accessible, should be extirpated with curette and caustics, provided the general condition of the patient and the existence of active lesions in other regions of the body do not forbid interference. Phototherapy, of which we have had great expectations, has hitherto given no satisfactory results except in lupoid tuberculosis and in disease located near the introitus nasi.

Although a rare disease, owing to the various means of defense with which the nasal chambers are furnished, the obvious indication, especially as regards nurses and attendants upon tubercular subjects, is to avoid causing an abrasion of the surface which might become an open door to the tubercle bacillus.

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TUBERCULOSIS OF THE PHARYNX.*

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It is no longer doubted that tuberculosis of the pharynx may occur as a primary lesion. That such is extremely rare is also believed, as a vast majority of cases occur as a late sequel of pulmonary disease while a smaller number are seen as an earlier feature of an acute general miliary tuberculosis. The frequency of pharyngeal tubercle has been variously estimated. A maximum estimate is that of Lennox Browne, who, in the final edition of his book, stated that he had seen only about twenty cases with pharyngeal, buccal or lingual lesions, this number representing occurrence in about from .33 to .25 per cent of all forms of tuberculosis of the upper air passages and one per cent of those with laryngeal involvement. Minimum estimates are those of Heintz and Willigk, the former finding but 14 out of 1226 cases of pulmonary tuberculosis and the latter but one out of 1317 cases of general tuberculosis. In children the pharyngeal lesion has been considered as even more rare, only about 100 cases having been reported up to eighteen years ago. As will be seen later, some cases in children running an acute course may have been overlooked, but Browne avers that the division into acute and chronic forms is fanciful and without practical utility, for he forcefully adds that "a patient who is the subject of pharyngeal or faucial tubercle is never in doubt as to its acuteness."

A calm review of the statistics as to frequency excites some surprise. As the pharynx is directly and constantly exposed to assaults of various kinds, it would seem as if direct inoculation should occur more frequently. Moreover, the intimate relation of all the intra-pharyngeal structures to the lymphatic system would indicate a greater liability to infection than is actually found, if indeed it be assumed that the latter more often results through the lymphatic route. It has been suggested that the pharynx enjoys a special immunity from infection of this nature. A vital protective factor would seem to exist in the scanty anastomosis between the external and internal lymphatics. On this particular topic our colleague, Dr. Jonathan Wright, has observed that "presuming that

* Contribution to a Discussion on Tuberculosis of the Upper Air Passages held at the New York Academy of Medicine, April 17, 1904.

infection takes place through the epithelium, the pharynx is very much more exposed to it than the larynx, and infinitely more exposed than the bronchioles and air cells. . . . On the other hand suppose that the tubercle bacillus is deposited in the pharyngeal tissues only by the lymphatic and blood currents. Owing to the extreme richness of the pharynx in the supply of these, we cannot believe that it is ever from these, less often the *temporary* host of the invading organism than the larynx and the lungs. On either hypothesis, therefore, we must deduce the conclusion that there is some factor in the pharyngeal mucosa which does not obtain in the larynx or in the air passages below it."

Much has been written as to the ability of the bacillus to penetrate sound epithelium. It may be that in the later stage of mixed infection which the pulmonary disease presents the pus cocci get in between the epithelial cells and there form minute abscesses leading to erosions through which the bacilli penetrate.

Involvement of the tonsils and cervical glands is generally secondary to the lung changes in adults, but in children the glandular change more often precedes. When ulceration has once appeared it apparently spreads superficially with the destruction of the surface epithelium, but even at this stage a small-celled infiltration has invaded deeper parts. This infiltration is extensive and destructive and efforts at repair are feeble. The accompanying local inflammatory edema is not merely a fluid dilatation of lymph spaces, but is rather of a mucoid nature. In general the process begins in the sub-mucous tissues and ulceration results from the breaking down of these deposits. A possible source of infection may be tuberculous disease of the spine. The larger ulcers are formed by the union of separate foci of destruction.

As to other modes of infection it was above noted that some observers believe it possible for the bacilli to penetrate normal skin and mucosa. The immediate result is a glandular tuberculosis, and according to the degree of penetration, the virulence of the bacilli and the vulnerability of the lymphatic structures we may have, first, a latent tuberculosis (of which more later), with but few bacilli and little structural change; second, a typical local lesion, or, third, the latter, plus a systemic invasion. The epithelium may remain intact while its resisting power is lowered. In the usual pharyngeal cases the involvement is late in the course of the general disease, often not until shortly before death. It has been suggested that in men the sputa may infect the beard and that from the latter may come a secondary infection. The sanitary suggestion from this fact is obvious.

It is hardly necessary to call the attention of this audience to the general symptomatology and treatment of this form of tuberculosis. No topical measures have succeeded better than curettage and the application of lactic acid. One author has reported the cure of a small number of cases with trichloracetic acid, but there is some doubt as to accuracy of diagnosis in the instances presented. Some cases have been benefitted by phototherapy.

The typical differences between the syphilitic and tubercular ulcer are enumerated in every text book. The results following the use of the iodides have cleared up some doubtful cases. As between lupus and tuberculosis it may be said that an initial febrile course, intense pain, an isolated origin on the posterior pharyngeal wall or other site, avoidance of the epiglottis (a favorite site of lupus), and a marked infiltration with flattened surface, all indicate tuberculosis; the decision is strengthened by the occurrence of lung lesions and the absence of any old nasal scars.

From a review of recent literature of the subject three facts have impressed the writer as worthy of special mention.

The first is that there is an acute form of the disease occurring in children which has been mistaken for diphtheria. The history of a case reported a few months ago may here be summarized. A girl of ten years who had been coughing for four weeks began to complain of cervical pain. Examination of the pharynx five days later revealed a pharyngitis with a reddened palate and upon the nasopharynx, the posterior pharyngeal wall and the posterior surface of the soft palate an adherent, thick, whitish membrane. The epiglottis was edematous. There was no dyspnoea, but marked dysphagia was present with fever. The glands on both sides of the neck and at the angles of the jaws were involved. From inspection a diagnosis was made of diphtheria, but no Klebs-Loeffler bacilli were found. The membranes cleared off in the course of a month. The velum showed less inflammation, but was covered with a yellowish-gray superficial ulceration. The glandular enlargement subsided. Then succeeded high fever and the palatal insufficiency allowed regurgitation through the nose. The left pulmonary apex now showed for the first time commencing disease and tubercle bacilli were found in the sputa. The patient died from the pulmonary trouble in ten weeks. The authors who have reported cases of this kind agree that the aspect on inspection is like that of the initial stages of a severe diphtheria, but no Klebs-Loeffler bacilli have been found. It need hardly be said that there are vulnerable points in such an argument. No statement is made as to bacteriological findings other than that

of the absence of the diphtheria germs, and granting that the initial lesion in the pharynx was tuberculous, it may have been secondary to some focus in the chest, at first undiscoverable, thus negating the contention that these cases are always primary.

A second fact worthy of emphasis is that in a certain number of cases tuberculous deposits in the palate have led to palatal perforation and the destruction of bone, have, in short, given a lesion which we have been accustomed to refer here to a specific cause. Grogler was able to collect, in 1900, but ten such cases, and as far as the writer can learn, but one additional case has since been reported. Perforations of both the soft and hard palates have been included in the number referred to. One case of tuberculosis of the hard palate leading to necrosis has been reported, and in this instance extensive removal of bone was necessary. Such cases may be primary, but in eight out of ten of Grogler's cases the process occurred in the course of pulmonary or laryngeal disease. The process is a slow one, with the usual symptoms. Examination shows yellowish polycyclic granulations on the palate, with an adherent bloody covering, low borders, superficial, extremely sensitive and surrounded by a reddish-violet zone. They gradually increase in depth until they perforate. The perforations may occur anywhere and be of variable size. They are generally of an irregular sinuous shape and frequently appear as fissures at the bottom of a narrow space. In this respect there is a noticeable contrast with the syphilitic perforation. The general mucosa is pale and anemic and the glands of the neck are generally involved. Multiple perforations have not been reported.

Two sets of cases are made: In one the condition is strictly local, the opening is small and may close up. Recurrence is rare. In the second the local condition is but one feature of the general malady. A differential diagnosis is called for from perforations which are congenital, due to trauma, a sequel of scurvy or malignant disease, the "mal perforant buccal" of the French authors, and due to syphilis. The "mal perforant buccal" has been noted especially in tabes and may follow pyorrhoea alveolaris. In the tabetic cases, we find sensory disturbances in the trigeminal area, especially close to the ulcerations. The openings are often bilaterally symmetrical and occur by preference at the periphery of the bone near the alveolar border, in a direction parallel to the axis of which the ulcer is elongated. The openings are of considerable size and the attempts at repair are indolent. The syphilitic perforation is of considerable size, has no surrounding yellow-

ish granulations, and is of a punched-out appearance. A careful search should be made for other evidences of specific trouble, and the lungs should be examined. As stated, small perforations may heal in the soft palate under applications of lactic and chromic acids silver solutions and light galvano-cauterizations. Larger openings call for surgery and prosthesis.

The third fact here emphasized relates to the so-called "latent" tuberculosis of the tonsils. As early as 1884 Cornil and Weigert had called attention to the frequency of tuberculosis of these organs among phthisical patients, lesions scarcely noticeable to the naked eye and giving no symptoms. In 1893 Schlenker inquired as to the correlation between tonsillar, cervical-glandular and pulmonary tubercle, closing his inquiry by saying: "We believe that the cervical ganglia receive their infection from the tonsils, and that the latter receive their own from the lungs by means of the sputa." For him, then, the tonsillar lesion is consecutive to the pulmonary. This view was supported by Krueckmann in 1894, but he added that he had observed two instances of primary disease in the tonsils derived from ingesta. In the same year, Strauss noted the presence of virulent tubercle bacilli in the noses of healthy persons frequenting the vicinage of phthisical patients. When, under these conditions, the bacilli reach the naso-pharyngeal lymphoid tissue of a person hereditarily predisposed to tuberculosis, they there find a soil favorable to their development and a tuberculous adenoid results.

These statements briefly review the status of the question up to the appearance of the classical paper by Dieulafoy read before the Academy of Medicine of Paris, April 30th, 1895. Though its conclusions have been vigorously attacked, it marks a new era in the discussion of the question along the lines of modern methods of investigation. The discussion is still going on and we are not yet able to give a final answer to some of its propositions.

Dieulafoy's views may be summarized in a quotation from his original paper. After reference to the work of his predecessors he continued as follows: "There is another form of tuberculosis of the palato-naso-pharynx which is much more frequent. If this form to which I allude has for a long time passed unperceived, it is because it does not correspond to any of the forms of pharyngeal tubercle I have just sketched. This form is neither ulcerous nor granular; it is not at all painful; it remains unknown until the day when it reveals itself by certain functional troubles; it is benign in appearance, but it is none the less formidable, for it is sometimes the portal of entrance of a generalized tuberculosis and of pulmonary phthisis.

This tuberculosis is torpid, concealed, almost latent, having as its favorite seat the lymphoid tissue of the naso-pharynx. It reveals itself by a greater or less enlargement of this tissue, by a hypertrophy of one or more of the tonsillar structures. As concerns the pharyngeal tonsil, it confounds itself with the condition known as adenoid vegetations; as concerns the faucial tonsils, with the condition known as simple hypertrophy. Inspection in no wise reveals the nature of the lesion. It does not present, I repeat, on inspection, either granulations or ulcerations, only simply hypertrophy, with the usual symptoms of the latter."

Time does not allow us to follow the steps of his work. Suffice it to say that he collected tonsils and adenoids removed in consecutive practice and inoculated them into the abdomen of guinea pigs. Out of 61 tonsil inoculations 6 animals died with evidence of tubercle at the site of inoculation and of general tuberculosis; 2 without local lesion, but with pulmonary involvement; 4 with lesions of general sepsis, and 49 without apparent cause. Out of 35 adenoid inoculations, 3 of the animals died with local lesion and pulmonary disease, 4 of tubercle without local lesion, 3 of sepsis and 25 without evident lesion; that is, one of every nine cases of apparent simple tonsillar hypertrophy, and one of every five apparent cases of simple adenoids, gave positive results in animal experimentation.

Clinically, this latent process may not pass beyond the first stage, or it may go on to the second, that of cervical adenopathy. It may not surmount this barrier and recovery is possible or, after a period of months to years, the barrier is surmounted and pulmonary infection results.

Since the date of Dieulafoy's paper the literature has become most voluminous. Reference can be made only to one or two representative authors. In 1899 Lewin traversed the same experimental ground and from experience and collective investigation came to the following conclusions:

- (1.) According to our researches five per cent of hyperplastic tonsils conceal tubercular foci.
- (2.) The tuberculosis corresponds in its essential features to the so-called tumor form of tubercle of a mucous membrane; it has no recognizable features, is the latent tuberculosis.
- (3.) This latent form may doubtless be the first and exclusive localization of tubercle.
- (4.) It is usually associated, however, with deposits in other areas, especially of the lungs, though this is not manifest at the time of operation.

(5.) It is a relatively frequent condition in pulmonary tubercle.

(6.) It can occur in tonsils of normal size as well as in those enlarged, *i. e.*, hyperplastic. As to whether the hyperplasia is brought about by some toxin influence is doubtful; in any event, the latter can retard the normal involution of the tonsil.

(7.) This latent tuberculosis plays only a relatively unappreciable role in the etiology of tonsillar hyperplasia.

(8.) It can be definitely removed by the ablation of the tonsil, even in the presence of synchronous tuberculosis of the lungs.

Three years previously Pluder and Fischer had noted that hypertrophy was not a constant feature of latent tonsillar tubercle, for the same condition was occasionally found in atrophied organs. Hence came the suggestion that tonsils might contain bacilli which had exercised on them no effect, might be "bacilliferous" but not "bacillary." As to the ultimate fate of the latent foci, the latter authors state that it is most probable that they are eliminated in the retrograde metamorphosis characteristic of the tonsils, for they show little tendency to destruction or cheesy degeneration. Far less probable is the absorption of the foci, as often happens in peritoneal tuberculosis after laparotomy. They may possibly break out into open ulceration. It is important that we should recognize the latent tuberculosis at a time when the system is still in a good condition and able to make an effectual resistance.

The foregoing statements represent fairly well the views of the advocates of this theory of latent tuberculosis of the tonsils. But combatants of the correctness of these deductions were soon in evidence. It was pointed out that while Lewin found latent tubercle in five per cent of his tonsillar examinations, in only twenty instances did he clinch the proof by resort to animal inoculation, and of these nineteen were negative. The opposition has been well represented in the views of Jonathan Wright, whose words on this subject are found in a paper published in 1900. He notes as proper methods for the determination of tuberculosis here as elsewhere the following:

(1.) Animal inoculation; but here this is liable to error, as we cannot exclude surface contamination by the bacilli.

(2.) Staining methods, but these are difficult, and it is hard to find the bacilli in lymphoid masses studded with visible tubercle.

(3.) Tuberculin injections, but these cannot be employed sufficiently often to make deductions from the results of this method conclusive.

(4.) Microscopical appearances; but those of tubercle under the conditions in evidence are misleading, for the familiar aggregations of giant cells, lymphoid and other cells making up the conventional picture of tubercle may be due to other causes, as, for instance, for foreign bodies.

That the latent process, as above described, does actually exist, no one doubts; that it is as common as the earlier observers would have us believe is a proposition that cannot be maintained. Wright's own researches, summarized in the paper referred to, comprised 54 cases of faucial, 51 of pharyngeal, and 16 of lingual tonsils. Twelve of these were inoculated into animals, and the same twelve were cut and stained along with many others, but no bacilli, no tubercle, and no giant cells were found in any of them. The cases stained by Lewin all had this in common: the tuberculosis was only in the lymphoid tissue, never in the submucosa, the bacilli were scanty and in only the affected areas, never on the epithelium or in healthy lymph follicles. They were never found in the nasal or naso-pharyngeal mucus. The lesion was localized in certain areas, never diffused. Hence the negative results of some authors may be explained by the fact that their sections did not pass through affected areas.

Finally, it may be noted that an effort has been made to find in the familiar pharyngitis lateralis a frequent lodgment of this latent process.

I have thus endeavored to set fairly before you both views on this question. It has not yet been finally answered. For this answer we must await the results of further investigation. Whether the consideration of pharyngeal tuberculosis followed in this paper has been the most profitable one or not for a general discussion must be left to the judgment of this audience. The attitude of the laryngologist toward all these conditions is too often only that of one affording local relief while the systemic deterioration goes steadily on. But in so far as his province lies, that of healing local lesions, he may join in the hopeful note now sounding in the crusade against the ravages of tubercle.

TUBERCULOSIS OF THE LARYNX.*

BY J. W. GLEITSMANN, M.D., NEW YORK.

Laryngeal tuberculosis covers such a vast field, that a complete essay would by far transgress the time at disposal. Addressing a body of laryngologists, several of whom have made valuable contributions to this subject, I may be allowed to omit well-known, everyday features, and to confine myself to points, which I either thought worthy of your interest or which are debatable on account of the difference of opinions held till now.

The question of the mode of infection, of the invasion of the larynx by the tubercle bacillus has been ventilated by many writers in recent years. Louis as early as 1825 thought that the sputum from pulmonary cavities brought on corrosion and ulceration of the mucous membranes. Whilst also some present investigators believe the sputum to be a causative factor, they consider the entrance of the bacillus into the larynx necessary, either through the intact epithelium, or through loss of its continuity, or through exits of glandular ducts, etc., but these views do not explain the relatively large immunity of the larynx in the presence of the many cases with pulmonary cavities. Inhalation has next been accepted as a favorite cause of infection. But it gives no satisfactory explanation, as children crawling on the floor and inhaling its dust and bacteria; professions inclining to laryngeal affections, as public speakers, also drinkers, smokers, do not show a larger contingent of laryngeal tuberculosis than ordinary mankind. The observation that tuberculosis appears in other organs, for instance, bones of the extremities and is curable without pulmonary complications, can certainly not be explained by the theory of inhalation.

Virchow already said that the best locality to study the tubercle is the larynx. In this connection Meyer (*Virchow's Archiv*, 1901) made some interesting investigations. To find out if the tubercle bacillus enters the laryngeal tissue from the surface of the mucous membrane or by way of the lymphatic or blood vessels, he examined the larynx at the earliest possible stage of the disease of six deceased phthisical patients. In one case there was no pathological condition, in the others he found a number of tubercles in the deeper layer of the mu-

* Read at a stated meeting of the New York Academy of Medicine, April 21, 1904.

cosa, even in the submucosa without caseation and with an entirely intact epithelium. In the second stage the tubercles were confluent and caseation began in the centre. In this stage the epithelium can either remain intact or is shedded off in places, progressing to the third stage, where the epithelium is destroyed, the deeper tubercles are caseous and extend to the perichondrium. Meyer does not believe that the presence of tubercles in the mucosa with intact epithelium necessarily proves the infection by blood vessels, and inclines to the view that the bacillus can enter through the intact epithelium, or through small rents of the epithelium, which close again during formation of the tubercle, animal experiments on this latter point seemingly confirming his belief.

Prior to Meyer, a member of our Section, Dr. Jonathan Wright, in a paper on tuberculous infection of the lymphoid tissue in the pharynx (Transactions of the Amer. Lar. Asso., 1896) presented a colored drawing of a section, showing the tubercular invasion of the larynx through the epithelial structures in the most exquisite manner. To quote his own words, you will note that a veritable stream of tubercle bacilli is pouring into and through the thickened squamous epithelial covering of the laryngeal mucous membrane. The evidence of the penetration of tubercle bacilli through epithelial cells is here perfectly apparent. Another exponent of this theory is E. Fraenkel, who maintains that the bacilli find their way through the cells even with a perfectly sound epithelium. A similar observation as to the intestinal tract has been made by Dobroklowski, who found that tubercle bacilli can pass through an intact intestinal mucosa by demonstrating their presence in the solitary follicles, the mesenteric lymph glands and liver of guinea pigs, fed with bouillon cultures of bacilli and whose intestinal mucosa proved to be without demonstrable lesion. The missing link of the further path of the bacilli was recently supplied by Ravenel (*Journ. of Med Research*, Dec. 1903), who fed ten dogs fasting twenty-four hours with an emulsion containing bacilli, killed them three to four hours later, and removed the chyle and mesenteric glands, using them for intraperitoneal inoculation of guinea pigs. Twenty-one out of twenty-four pigs showed tuberculosis on macroscopic as well as microscopic examination, of the dogs in three bacilli could be demonstrated in the chyle and glands, but none of the ten showed the smallest intestinal lesion.

Another mode of ingress of the bacillus into the larynx is according to Lake through surface erosions and through the floor of shallow ulcers, according to Horne through the gland ducts, notably the subglottic region and the ventricles.

From the foregoing it will not be surprising that a large number of recent writers consider the lymph vessels the principal channel of infection of the larynx. Krieg endeavored to explain the coincidence of unilateral pulmonary and laryngeal lesion of the same side by infections through the lymph channels (*Archiv f. Laryngologie*, vol, viii). He kept a record of 700 cases of laryngeal tuberculosis, 275 of which showed an unilateral affection of the larynx, and of these again in 252 or 91 per cent. the laryngeal and pulmonary lesion were found at the same side. The opinions of writers on Krieg's researches are somewhat divided, and Magenau found in 400 cases 65 unilateral affections of which 26 or only 40 per cent. correspond to the pulmonary lesion.

From what has been said it is evident that there is more than one source of infection of the larynx by the tubercle bacillus.

Turning to the more practical side of our subject, I cannot refrain from saying a few words about primary laryngeal tuberculosis. If I am not mistaken, the majority of laryngologists are averse to accept its occurrence, and believe that either a definable or latent tuberculous focus in the lung co-exists or precedes the laryngeal lesion. Foremost amongst them is J. Horne (*British Med. Journ.*, Oct. 31, 1903) who has in the necropsies of nine large hospitals during ten years not met with a case of primary tuberculosis of the larynx and feels justified to say that when the larynx is infected with tubercles, the disease is already established in the lungs.

I have spoken so often in this Section about this very topic and invariably met with such vigorous opposition, that I can be brief. When I assert here again my belief in the occasional occurrence of primary laryngeal tuberculosis I do not wish to be understood to consider it to be very frequent, nor would I be willing to subscribe to the correct diagnosis as to its primary origin in many cases published. Besides an indubitable macroscopic and microscopic examination of the local lesion, a complete absence of any pulmonary affection must be established, if necessary by the additional aids our modern methods, the Roentgen rays or tuberculin injections, which later will reveal auscultatory signs in a dormant focus. It must be left to the individual belief of each to accept or not Krieg's view, who assumes a primary laryngeal tuberculosis, if the larynx is affected prior to the lungs, although possibly another tuberculous deposit may somewhere exist in the body. Obviously if the postulate is brought forth, that no where in the lungs the smallest tuberculous area exists, then the occurrence of primary laryngeal tuberculosis cannot be any longer maintained, neither in the dead nor much less in the living, as even in cases of death from other causes, for instances by Orth,

E. Fraenkel, Demme and others, in which at post mortem the lungs were found intact it can be asserted that a minute focus has been overlooked. But I for my part do not see the rationale of the argument to demand the abstract absence of disease—in this instance of the lung—to be able to believe in the existence of another, viz. primary laryngeal tuberculosis. Besides we see tuberculosis without such in the lungs develop in other parts of the body, for instance, the meninges, the genito-urinary tract, the peritoneal cavity, the bones, and with the different sources of infection at work, I do not see why the larynx should be exempt to yield to such an exposure under favorable circumstances. My opinion on this subject has been materially strengthened by my often cited two cases, whose diagnosis stood the test of the most painstaking scrutiny. Both suffered from tuberculous laryngitis of the severest type, were cured by most energetic treatment covering quite some time, and never showed before nor developed afterwards the slightest trace of a lung lesion. One is hearty and stout, now 15 years, the other six years after treatment had been completed. I believe to be entitled to look at these cases not only practically but also in theory as cases of primary tuberculosis of the larynx.

Clinically we are accustomed to recognize four forms of laryngeal tuberculosis: the miliary nodule, the infiltration, the ulceration and the tumor. I shall not weary you with an enumeration of the symptoms of the usual cases in which the merest tyro can make a diagnosis and prefer to speak of the initial changes and some varieties not observed every day. It is principally the initial stage which ought to interest us because as in cancer we can hope for better results than in a well-developed or far advanced case.

Formerly we looked at anæmia of the palatine region in an otherwise suspected subject as almost a pathognostic sign, whilst we are now inclined to consider it a resultant of deficient or malnutrition of the individual. In a number of cases we see hyperæmia instead of anæmia of the faucial regions accompanying the laryngeal affection. I have noticed in a number of instances that the larynx presents the picture of intense hyperæmia of the vocal cords long before any signs of tuberculosis, as infiltration, bulging of the posterior laryngeal wall make their appearance. Very suspicious of a grave lesion is an unilateral congestion of one of the cords, which was also the universal opinion of the London laryngologists at the occasion of demonstration of two such cases by St. Clair Thomson, in which no tuberculosis of the lungs could be detected. That this rule is not without exceptions, which are sometimes very puzzling to the physician, I experienced myself in the case of a middle-aged gentle-

man, who was run down physically and mentally, and had been treated without success fully half a year by one of our best laryngologists. Although his lungs appeared to be healthy, he was hoarse, coughed and presented not only an intensely congested cord, but also a uniform thickening of the mucosa. Two energetic cauterizations strictly confined to the diseased cord restored its normal condition as well as his voice.

Of other early symptoms, we notice occasionally an alteration or lessening of the sensibility, further changes of the voice, which are not necessarily produced by congestive processes or real infiltrations, but which indicate a sluggishness, an impaired, diminished motion, due to deficient function of the internal tensors. It is self-evident that any proliferation, any fullness of the mucosa of the posterior laryngeal wall, however small it may be, must receive our earnest consideration, and we must not wait till the arytenoid region itself is infiltrated or the border of the epiglottis becomes thickened and loses its usually well defined, sharp line. To me it has often been the most difficult task in dubious cases to determine the true nature of a fullness of the posterior wall and in some instances it was only after the beneficial effect of a cauterization, that tuberculosis could be excluded. In such cases I have in recent years employed nitrate of silver fused on a probe, and have every reason to be satisfied with its application.

I shall not enter into the differential diagnosis of tuberculosis from syphilis and cancer, as all the text-books contain sufficient data.

When in otherwise doubtful cases an immediate decision is desired, recurrence can be had to the tuberculin test, which has been employed in few cases with good results by myself as well as by others. I have for years past almost entirely discarded Koch's Tuberculin, and use for diagnostic and therapeutic purpose Dr. von Ruck's watery extract of tubercle bacilli, which being prepared in three solutions of different strength makes its administration extremely simple. I have already spoken favorably of this preparation in the course of discussions before this Section, and Dr. Dennison of Colorado stated at the meeting of the British Congress of Tuberculosis 1901, that he found it more efficacious and prefers it to all other products in the same line. Whilst with due diligence we cannot fail by this test to discover in pulmonary tuberculosis either symptoms of an otherwise latent area or increased activity of lesions found previously by the ordinary methods of examination, we have the advantage of the ocular inspection of changes produced in the larynx—tubercular foci and their surroundings become hyperæmic, even minute infiltrations larger, more succulent, often miliary nodules not visible before,

make their appearance. Ill results I have never seen myself and the slight local and general reaction, passes off after a few days.

I regret that time forbids to say more than a few words about the different varieties of laryngeal tuberculosis, the errors made in diagnosis and its consequences. When I searched the literature of surgical treatment of the larynx, 1895, I found that eight total extirpations of a tuberculous larynx had been made, in four of which carcinoma had been diagnosed *in vivo*, and tuberculosis found afterwards by a careful examination of the specimens. That the microscope cannot always be depended upon, is proven by a case published in 1899 by Schmigelow, a well-known and careful observer. The diagnosis of an ulcerating, neoplastic infiltration of the left side of the larynx was made in a man 60 years of age suffering from hoarseness and dysphagia. Excised pieces showed changes resembling tuberculous processes, but contained no bacilli. The microscopic diagnosis was Adenocarcinoma, thyrotomy was performed, and the diseased tissue removed, which now confirmed the presence of tuberculosis. Acute miliary tuberculosis developed with exitus seven weeks later.

I shall not relate the numerous cases reported which are interesting on account of the difficulty of diagnosis as well as of their course, and shall mention only the form described by our member, Dr. Theisen, in a recent paper on hypertrophic tuberculosis. His patient had thickening of both arytenoids of both vocal cords and ventricular bands with perfectly intact, grayish red mucosa. The diagnosis of syphilis and of pachydermia was made by some of the many laryngologists consulted, and if my memory does not fail me, I also saw the patient and concurred in Dr. Theisen's opinion of tuberculosis. Although his case did not present a circumscribed tumor, I infer from his subsequent remarks, that he classifies it under the type of tuberculous tumors, of which he gives a complete literature. On the same subject an excellent article was published by Trautmann in *Fränkel's Archiv*, vol. xii.

So many foreign articles have recently appeared on the subject of pregnancy and laryngeal tuberculosis, that I cannot pass it over altogether in silence. The consensus of opinions seems to be, that by far the greatest majority of women so afflicted die either during pregnancy or soon after delivery, although Seifert reports the case of a woman, treated before her fourth pregnancy for severe tuberculosis and discharged almost cured. When pregnant the fourth month, she had similar laryngeal lesion and extensive infiltration of left upper lobe. Under persevering treatment the laryngeal symptoms subsided, a healthy child was born, and the doctor thinks she can be

considered cured. This happy issue is exceptional, and the writers discuss the means to be adopted for relief. Whilst Kuttner, who first broached the subject, is more conservative and in a second publication, advocates expectancy in good condition of patient and slight laryngeal affection, tracheotomy in infiltration and if of no effect, artificial abortion, Godkensen and Lewy are more radical and consider artificial abortion justifiable in the first few months and in a condition of the larynx, which otherwise would offer a prospect for improvement without pregnancy.

The ultimate aim of all the work done by the practitioner as well as the scientist, in the dead house, the laboratory, with the microscope, on the sick-bed, is to assist us in treating and if possible curing our patients. Unfortunately the treatment of laryngeal tuberculosis is an unsatisfactory subject to deal with for two reasons: first there is so little unanimity as to the remedial agents employed that in my opinion no two laryngologists would treat the same case in the same manner, and secondly in spite of undoubted progress having been made, our efforts of a cure are successful only in a minority of cases, which is in a great measure due to the pulmonary complication.

Aside from general therapeutics and climate, which when benefiting the pulmonary disease, also improve the laryngeal trouble we can consider treatment under three headings, viz. the medicinal, surgical, and radiotherapy.

The number of drugs locally employed is a legion and their multitude is another proof of the fallacy of their intrinsic value. I shall enumerate only a few, which either have stood the test of time or enjoy a degree of novelty.

Adrenalin, orthoform, anæsthesin are valuable additions to our therapeutics. Formaldehyde is well spoken of by English and American writers. Of the latter Johnson saw good results from a 2 per cent. application, whilst, Gallagher begins with $\frac{1}{2}$ per cent. increasing to 10 per cent., and has the patient himself use a spray of 1 to 500. Thiocol, guaiacol, eucalyptol, resorcin, menthol in different strength and vehicles are favorite remedies, and the latter seems to have obtained a permanent place in our therapy. I am using it with great satisfaction combined with camphor and benzoïnol as spray or by a laryngeal or tracheal syringe, and Freudenthal recommends an emulsion of menthol, olive oil and orthoform, which is also used by others with good success. The doctor is so well pleased with the results from his preparation, that he has almost entirely discharged curettage and lactic acid. By abrogation of the latter

my assertion made at the Moscow International Congress, 1897, falls to the ground, viz. that with all the divergence of opinion about the value of different remedies, unanimity existed at least as to the employment of lactic acid in ulcerations. I for my part would not like to be without it, but I most earnestly deprecate its use for infiltrations with intact mucosa. If milder means are of no avail in the latter, a reasonable prospect of success can be expected from the different phenol preparations, viz. monobromo—monochlororthophenol, parachlorphenol, sulphuricinate of phenolsoda and phenosalyl, a mixture of carbolic, salicylic and lactic acid and menthol. The latter has a warm advocate in von Stein, who saw by its use infiltrations become smaller and voice and expectoration improve. Chappell recommends, 1891, creasote in wintergreen and olive oil for sprays and submucous injections. The intravenous injections of cinnamic acid, Hetol (Landerer) originally devised for pulmonary tuberculosis have also been made by Krause and his assistant Guttmann in laryngeal cases who report that not only superficial lesions of the mucosa heal without other remedies, but that also medical and surgical treatment give better and quicker results.

I can be brief as to the surgical treatment, as I do not intend to speak about its technique, and only refer to one feature of it, viz. curettage, or more properly expressed, excision of tuberculous tissue with the double curette. Ever since I published my first papers on this subject, I have met with opposition from different quarters, and I am free to confess that some objections are justifiable. Although I have not met with bad consequences myself except in one case in which I am conscious to have accelerated the patient's death by a rapid extension of the process following curettage, ill results have been reported by several operators. The chief objection is that it is difficult if not impossible always to remove all the diseased parts till healthy tissue is reached. Although here as well as in cancer in other regions we try to accomplish this end, its failure is not of such vital importance in tuberculosis as in cancer, as if properly handled tuberculosis is more amenable to treatment and has a tendency to self-limitation. If we guard against overzeal in operating, and decide each case on its merits if suitable for operation, we will not regret our action nor meet with bad sequelæ. The excruciating pains at deglutition in infiltration of the epiglottis, the arytenoid region, subside quickly and it is astonishing how rapidly sometimes the regenerative power manifests itself and the wound heals. I should regret very much if the remark of Dr. Hunt made at the meeting of the British Medical Association 1901, would become true, viz. that among Americans a tendency existed

to return to therapeutics in force before 1880, which he would exceedingly regret. In the beginning there was as much if not more aversion in England as in America against curettment, but it is extensively practiced by our English confreres now. It is to no purpose to enumerate the publications pro and contra, although we find also in the American literature warm advocates and valuable contributions. The present status of the question is in my opinion best pronounced by two German writers who say that although the enthusiasm for surgical treatment has decreased, and the great expectations at its inception have not been realized, it is still to be adopted in suitable cases and retains its place as a therapeutic measure.

At the present time a discourse of the treatment of laryngeal tuberculosis would lack completeness without consideration of radiotherapy under which name I embrace here for brevity's sake all appliances of rays from whatever source, a few of which I have brought here for your inspection. It does not admit of doubt, that certain rays produce visible effects, as decrease of pain, in some instances improvement of cough, expectoration, of ulcerations, even of the general condition of the patient, but to my knowledge no authenticated complete cure by rays alone has been reported. This failure so far ought not to lessen our efforts to master the mysterious forces, but on the contrary, to make them a willing object of our efforts for the benefit of our patients.

Finsen light, Cooper Hewitt light due to mercurial waves, the ultraviolet rays, the search-light, the actinolight, the two latter employed by Freudenthal, have all been used with more or less success, but predominantly in pulmonary tuberculosis. Besides these we have the Roentgen rays, the high frequency currents, and probably before long we will also hear of radium being applied in laryngeal tuberculosis. The Finsen light and the ultraviolet rays have less penetrating power than the Roentgen rays, but the great expectations from the latter for the larynx have not been fulfilled.

We hear that in the beginning the number of bacilli increase, and only after a prolonged use of a low vacuum tube, improvement is noticeable. Dr. Tousey demonstrated last week a tube, throwing the rays through a prolongation to a limited area only and he uses it on the outside of the throat. Throwing the Roentgen rays into the mouth on a laryngeal mirror and expecting them to be deflected into the larynx like ordinary light rays, seems to me not feasible, as Roentgen himself showed that his rays are not polarizable, cannot be deflected nor concentrated by lenses.

In 1899 Tesla surprised the world by his assertion that high frequency currents would cure tuberculosis. But the bactericidal power of these currents in the laboratory is not sufficient to have the same effect in the living being. Nevertheless good results have been reported from local applications in other diseases and localities, for instance, tumors, hypertrophies, and it is not unreasonable to expect a similar beneficial influence in laryngeal infiltrations. Not long ago a laryngeal tube has been constructed with another fine tube in its hollow stem, which latter carries the current to the distal laryngeal end and thereby prevents the disagreeable contact of the current with the buccal and pharyngeal parts.

I crave your indulgence for the cursory nature of this paper, which by necessity had to be brief and from which I therefore had to exclude many points, important enough to elicit your interest and consideration.

46 East 25th Street.

Injection of Paraffin Applied to the Treatment of Ozena.—M.

BROECKAERT.—*Revue Heb. de Laryng., D'Otol. et de Rhinol.*, July 4, 1903.

About a year ago, when Broeckaert first made a communication on the injection of paraffin in ozena, he employed a paraffin fusible at a temperature of 60 degrees C. Since then, however, he has modified his method and prefers paraffin at 45 degrees. This hardens more rapidly and, therefore, he claims has given him better results. The temperature moreover being reduced at the moment of the injection, Broeckaert has not seen the formation of thrombus in the neighboring vessels and the danger was, therefore, inconsiderable. He prefers to inject a small quantity at a time and to do this always from backwards forwards. Broeckaert finds the results from this method excellent. The mucous membrane of the nose recovers its normal aspect and the effects produced on the nose and pharynx are evident.

The author believes that this treatment is applicable to all cases of ozena except, of course, such cases in which there is a complicating sinusitis, when the latter should first be treated. Moreover if the membrane is too much atrophied it would be well to excite its vitality by vibratory massage or by electrolysis.

Regarding the effect of injection, the mucous membrane becomes turgescient, and the work of proliferation extends even into the vascular parts of the turbinates. The effect of the paraffin, therefore, is a kind of continued irritation to the tissues.

W. SCHEPPEGRELL.

THE TREATMENT OF TUBERCULAR LARYNGITIS.*

BY S. E. SOLLY, M.D., COLORADO SPRINGS.

In tubercular laryngitis the mortality is so alarmingly high that most physicians look upon such cases as hopeless from the start, and therefore resort to palliative instead of to radical treatment. The chief reasons of the high mortality are that almost invariably a laryngeal affection is transmitted from a previous pulmonary infection, thus there are two sources of danger and what is still more serious, there is a feeble resistance to the disease, as shown by the extension of the tuberculosis from one organ to another during the first stage of the attack. For these reasons the physician has to contend with the disease in two different organs of a person whose physique is peculiarly ill-fitted for these conflicts. Moreover, the local treatment of the laryngeal tuberculosis to be successful demands special skill, experience, courage and patience on the part of the physician, and faith and fortitude on that of the patient.

It is no wonder then that the physician engages in the conflict in a half-hearted way, knowing the fearful odds against his success. But it is worth while to fight the enemy with vigor, even though statistics taken of cases treated by specialists in a favorable climate, show but 12% arrested in those in whom ulceration had occurred previous to the treatment, and in those in which ulceration had not taken place no more than 30% arrested. The saving of the lives of even this meager number is a good work, but a still better one is the saving of the larger number from the direful distress of an unchecked tubercular laryngitis, and this can be accomplished in most instances by judicious local treatment, even though many of these cases die eventually of phthisis.

While it is true that the ultimate results of laryngeal treatment are greatly influenced by the accompanying pulmonary disease, yet what can be done by wise topical treatment over and above the general treatment, is shown by the following statistics of cases treated in Colorado. Taking the results in laryngeal cases without considering the ultimate fate of the patient, there was permanent arrest of the local disease in 64%; temporary arrests in 5% additional cases, in which latter the tissues again broke down shortly before death. Looking at the ulcerated cases alone, 50% healed permanently, 10% temporarily.

* Read at the Tenth Annual Meeting of the American Laryngological, Rhinological and Otolological Society, held at Chicago, May 30, 31 and June 1, 1904.

Having given thus briefly the reasons why laryngeal tuberculosis should be treated to its fullest extent, let us now consider the pathologic conditions. In the large majority of cases they are broadly these: A tubercular infiltration of the sub-mucous tissues which is continuously being added to by the absorption through the lymphatics of bacillary material from a pulmonary focus. The mechanical pressure of the tuberculous masses thus formed causes swelling of the tissues with anemia or hyperemia of the mucous membrane and resulting in varied forms of sub-acute laryngitis to which may ensue ulceration of the mucous surface, and later perhaps, perichondritis and necrosis of the laryngeal cartilages. When the pulmonary disease gives rise to profuse discharges of germ-laden sputum and racking cough the laryngitis is increased and direct re-infection may occur.

The first essential of treatment is to place the patient under the best hygienic conditions, especially under the open air treatment in a good sanatorium. The second is a change to a good climate of which the preferable elements in their order, are, dryness, sunshine, cool air and a high altitude. The third essential is local treatment by an experienced laryngologist.

As the pathology of the disease shows that its stronghold is beneath the surface, and that it is receiving reinforcements through lymphatic and perhaps vascular channels from the lungs. The most important matter is to induce local fibrosis so that the larynx may be walled off from fresh tubercular invasion, and the healthy margin of tissue stimulated to absorb, destroy or shut in infected areas. At the same time the superficial surfaces should be put in good condition by cleansing, stimulating and disinfecting sprays or applications, and when ulcers are present, by direct treatment of them so as to surgically remove diseased tissue and to penetrate beyond its area with cauterizing acids. During this period as much rest as possible should be given the diseased organ by abstention from talking, and the administration of as much nourishing food as can be digested, given in forms which in swallowing cause the least possible amount of pain.

A non-tuberculous laryngitis is a not infrequent precedent, and accompanying conditions of pulmonary tuberculosis. I do not believe it is a cause of tubercular disease in the larynx, but when it exists previously to a tuberculous invasion, it becomes an aggravation of it, and often masks its approach. On the other hand a tubercular infiltration does itself produce more or less inflammation and catarrh of the mucous membrane. Tuberculosis of the larynx never appears at the beginning in a symmetrical form, unless it is hidden by a general non-specific laryngitis. When the tuberculosis precedes

the laryngitis, there is usually an anemic appearance in the early stage and with very little irritability, but there is generally a weak or husky voice.

In the cases in which there is hyperemia, and also hyperesthesia, there is usually a simple laryngitis, and if the nose is investigated a rhinitis with some obstruction. Treatment of the nose will often clear up the laryngitis. Even when the laryngitis is tubercular and the nose or naso-pharynx is diseased, they should be treated, and as radically as the case demands and the general condition of the patient permits. Much more can be done safely than is usually thought, and there is practically no danger of tubercular infection of surgical wounds.

With respect to the treatment of the mucous membrane, cleansing is of the first importance, and this is best brought about by the use of watery solutions, of which Dobell's is the type, followed by any of the varied astringents, stimulants, sedatives or alteratives found best for the exact condition. Inhalations are often of service, warm when there is much irritability, but usually cold are best, especially the compound tincture of benzoin one part, glycerine one part, and alcohol one and a half parts, used in a Globe inhaler. It is at the same time of great benefit to a bronchitis accompanying the tuberculosis of the lungs.

In cases of tubercular infiltration of the larynx without ulceration, the best treatment is by sub-mucous injections of about 20 minims of a 15 per cent watery solution of lactic acid, preceded by an injection of cocaine and adrenalin. This is painful but not extremely so. It does not have to be repeated often, at least not into the same tumefaction, and has a remarkable effect in locally arresting the disease. Lactic acid I have found far better than creasote or any other remedy. Lugol's solution with an equal quantity of alcohol or glycerine painted lightly over the parts two or three times a week is also of service. When there is decided pain, particularly on swallowing, there is in most cases an ulcer existing which cannot be seen owing to the swelling of the parts. A frequent seat is the under surface of the epiglottis. If a cotton laden applicator with cocaine be drawn somewhat sharply over the suspected part, and an ulcer is present, blood will often show on the cotton, and more pain will be complained of than after application to other parts of the larynx. The ulcer discovered, or even suspected, should first be rubbed with a 10% solution of cocaine, and then with lactic acid full strength. This does not hurt any more at the time than when the acid is diluted, and it is more efficacious, because it cauterizes the ulcer and leaves it protected. If it also touches sound tissue it does

no harm. This procedure almost invariably after a few hours brings mitigation of the pain. Should it return it is then best before re-applying the acid to curette thoroughly. The best procedure when curetting is determined upon, is to first rub in lactic acid of full strength freely, and then about three days later to curette. The reason is that the ulcer has thus been made aseptic, and there is therefore less danger of reinfection when the curettage is carried down deeply. I seldom find any other treatment of ulcers, whether concealed or visible, equal to this, and when done thoroughly, it does not often have to be repeated.

When pain is not due to ulceration but to pressure or to inflammation around the arytenoid joints, the sub-mucous injections or the surface application of iodine or a 12% solution of ichthol or scarification may relieve. A 50% spray of adrenalin used by the patient often gives comfort for lessening tumefaction. With regard to the application of orthoform to ulcers, I do not like it. When used sufficiently to deaden pain it has a disintegrating effect upon the tissues and increases the ulceration. Generally the patient gets far more satisfaction from his own use of Dobell's solution as a spray than from cocaine or any other sedative. Codein given internally in sufficient doses helps control cough and takes the edge off the pain.

With regard to curetting, I rarely use the double curette, and do not believe it is possible, or indeed advisable to remove all the tuberculous material. If you get beyond the base of the ulcer, you are liable to infect new tissue, and mere removal of the tuberculous material then present, does nothing to prevent more being conveyed from the lungs. I believe that the benefit derived from reasonable curettage is in the removal of an incubus, and still more in its stimulating effect upon the tissues, bringing fresh, healthy blood to the parts, antagonizing the chronic congestion inducing phagocytosis, and causing fibrosis. The lactic acid acts also as a stimulant, and by its peculiarly penetrating power and its affinity to select and destroy diseased tissue, destroys the ulcer, helps healing, and by forming an eschar, protects the wound.

Time does not permit me to further dilate upon this topic, but I would say once more in closing that, in my opinion most physicians are far too timid in handling a tuberculous larynx, resorting in their blindness to superficial treatment, and to sedatives in their mistaken kindness, when in most cases they had far better use the radical measures herein advocated.

THE PHYSIOLOGIC TREATMENT OF COUGH.

BY FAYETTE C. EWING, M.D., ST. LOUIS, MO.

Fellow, British Laryngological Rhinological and Otological Association, etc.

Cough, as a physiological expression, is identical with the intestinal *modus operandi* to produce evacuation. Let us be more analytical: An irritant or foreign substance connects with the peripheral elaboration of an afferent nerve, the impulse is transmitted to the respiratory center in the medulla, the ganglion cells of which translate it into other impulses which are transmitted along efferent nerves, of cerebral and spinal origin, to the muscles of the respiratory system through which they find forcible expression constituting cough. In the bowels irritation arises in the intestinal mucous membrane with a physiologic center (Budge's Antrum Anospino) in the lumbar chord. The muscular ture of the rectum is presided over by both motor and inhibitory nerve fibres. These are from the plexus, the sympathetic ganglia, the inferior mesenteria and hypo-gastric plexus. Though voluntary action is somewhat involved in defecatory expulsion, the physiologic process to procure cough and defecation are sufficiently alike to warrant comparison. Defecation being an accepted natural procedure with which only the demented would interfere, the comparison serves to accentuate the folly of suppressing what nature, with as beneficent a purpose, in another part of the body institutes to rid the economy of that, which, by its retention, obstructs and impedes the free action of organic life.

We would boldly assert this truth.—The constipated bronchioles should no more be bound than the constipated bowels. The irritation of accumulation in each is physiologic, and cough is a symptom, not a disease. Though its persistence may produce abnormal conditions, cough should be first considered symptomatic. The cough that comes from cause need not detain us if we are able to locate that cause and remove it. If the cough is disturbing and we cannot eliminate the cause or are to be delayed in our accomplishment of this end, we may with propriety seek how we may palliate the offending symptom without creating a new condition to the detriment of the patient and our own vexation. Here, we may remember that cough is not necessarily the outcome of accumulation any more than is cramp. Cough like cramp, may be most assertive when there is nothing to be rid of. In such event neither cough nor cramp are beneficently physiologic, and both may be inhibited with

benefit. It is easy enough to inhibit even to paralysis the respiratory mechanism, but in retaining the accumulation, what have we accomplished if the matter is unassimilable, and we know that it is. Have we not blocked the patient's breath and shut out the essence of life; will he not sleep the dull and heavy sleep of carbonic oxide anodynia and wake to languor; and if he be afflicted with the disintegrating lung, is it likely that life will be longer with the foreign body in contact with the inflammatory center. Might we not better hope for healing with the irritant removed. We are told that the Trinity at whose shrine the consumptive should bow, includes Food, Fresh Air and Rest. Food, to supply waste, fresh air to develop food desire, rest, indispensable to both. All are naturally dependent upon one another and work to a common end as creators and conservators of energy. Appetite will not develop without fresh air, for the body deprived of its source of vitality makes no demands on supply. The energy to breathe deeply and eat fully is possible only through rest. But let us remember that rest is relative in its definition and positive in its results. Rest does not imply inaction. Physical exertion may be rest under certain conditions. Rest is often synonymous with change, and upon change may depend reaction. The hollow-chested bookkeeper glued to his seat through the long hours, finds rest enough for his muscles while he coughs away his lungs. These sluggish organs do not clarify his system, and at the end of his day's work he retires to a restless couch with all his organs over-worked, in an endeavor to perform their functions under artificial conditions. If these conclusions be founded upon truth, it would seem the height of folly to give an *actively* secreting lung and bronchioles any drug whose action would tend to impede the outflow of an over-pour. A bolt in the open air will make clear a congested nose by forcing the circulation, and relieving stagnation, and a lung may be benefited by exercise. Vitilization may be more effective to relieve a cough than deadening the centers of life. The rational therapy of the cough due to accumulation should be founded on an antithetical intent, the facilitation of the out-throw until by the slower process of organic alteration, the secretion is restricted through the approximate return of the mucosa to life. Then, analgesics are indicated to relieve the cough, that is of no physiologic consequence. We should ever bear in mind that only harm can come of the retention of foreign matter for such the excreta is from diseased lungs and bronchioles. It can not be absorbed nor assimilated, and if left to accumulate, by a partial paralysis of the respiratory system, there will be interference with the free

entrance of oxygen into the lungs and poisonous gases will not sufficiently eliminate. The truth of these effects has been realized by the intelligent physician so thoroughly, that the old-fashioned cough mixture has played out. The stopping of a cough may be a very questionable procedure and one fraught with danger. When we hear that a cough has been suddenly stopped by drugging, we wonder if the physician was a fool or a wise man for it has come to be proverbial that "Any Fool can Stop a Cough." Cough being such a common complaint, patent cough cures pack the pharmaceutical shelf and are handy in private medicine closets. The patent nostrum originator, whatever his claim, works for a quick effect, taking no note of science if only he be able to relieve a symptom. The soothing syrups, thick with opiates, are an illustration in kind. Sometimes they are pushed to an everlasting sleep for the little patient by ignorant parents and selfish nurses, but only a few of these cases we hear of. How many recoveries are retarded by drugging to a partial insensibility, we know not of. But while we cannot afford to interfere with the free movements of an over-secreting lung whose cough is a physiologic necessity—even though it be at the expense of energy,—there are coughs that serve no physiologic end, which should be restrained. To this class belong certain manifestations of purely irritative cough, not due to accumulation, the reflex cough which has many sources and serves no purpose except to exhaust the patient through weariness and wakefulness. Of coughs that may be restrained or stopped, may be mentioned those due to congestive causes, usually the early stages of phthisis and bronchitis, exhausting in their effect directly or indirectly, all of which may be controlled by analgesics without harm to the patient through respiratory restriction and reduction of irritation. The determination of the question as to whether there is an accumulation which should be discharged, is the test of the advisability of restriction. If there be not any accumulation, remedies which restrain are always indicated; if there is, then we must either let the expulsive acts continue or relieve them by some remedy which lessens the amount of discharge (the offending and inspirational agent of the cough) or modifies the distress without affecting the expulsive act. The question to be asked determining our prescription for a cough due to mucous accumulation, is have we any remedy that we may employ to modify the exhausting tendency of an explosion that is physiologic in its action. According to reliable authorities, Heroin, a derivative of morphia, stimulates respiration centrally, increasing the force of the respiratory and expiratory acts though the number per minute

is reduced by their prolongation. Heroin seems to stimulate the heart, increase the blood pressure and diminish secretion, thus acting as an expectorant rather than a retainer of bronchial secretions. By its mild analgesic and sedative action, it may be prescribed when other drugs of this class are contra-indicated; and properly combined with other remedies, it is possible to produce a cough mixture that may be used as a palliative or curative of many exhausting coughs that uncontrolled, tend to the wear and tear of partial or complete invalids. The peculiarity attractive analgesic and sedative action of Heroin has caused this drug to be combined into many cough mixtures by the manufacturing chemist, some of which have special virtues; but the one from which we have secured our best results is Glyco-Heroin (Smith). This preparation has none of the nauseating or disgusting qualities of the old fashioned sedative cough mixture which is now never resorted to by the considerate practitioner, knowing as he does, that the coughing invalid is the one usually needing reconstructives and that anything affecting his appetite cannot but be destructive.

Glyco-Heroin (Smith) contains besides heroin, ammon, hypophos, a stimulating expectorant; hyoscyamus, vaso-motor constrictor; white pine bark, aromatic astringent; balsam toluanae, aromatic balsam (stimulant), glycerine, a non-fermentive vehicle. A most intelligent combination of drugs, adaptable to the relief of many forms of cough, and harmful to none.

A Few Remarks on Some Every-day Ear Cases.—J. E. SHEPARD (Brooklyn)—*Brooklyn Med. Journ.*, July, 1903.

The author's deductions are based upon a series of 1,000 recent ear cases. He finds an unusual number of mixed cases, and emphasizes the fact that the differentiating tests are too often overlooked or not put into practice in the usual office routine.

The frequent involvement of the perceptive apparatus may be due to the "all-to-strenuous" business and social life of the present day; and secondly, the possible association of the constant noises which greet us in the city life.

The decade which contain the largest number of all cases is that from 30 to 40 years. In the mixed cases the relatively larger number appear after 50 years.

Usual throat and general conditions must be looked after in conjunction with the aural lesion.

M. D. L.

A CASE OF HEMORRHAGE FOLLOWING TONSILLOTOMY.*

BY W. G. B. HARLAND, M.D., PHILADELPHIA.

The method used to control bleeding in this case makes it of interest. I. D., a girl aged 14 years, came into the hospital for operation under ether on pharyngeal and faucial tonsils. The resident physician was allowed to operate and started to remove the left, a large fibrous tonsil with the Matthieu tonsillotome. He did not close the instrument firmly enough, and the blades cut only partly through. The writer came to his assistance and with a pair of scissors served the tonsil completely. The other tonsil was then readily removed. Profuse bleeding at once began, its source obscure. The blood welled up from the post-nasal space apparently. Finally pressure with the thumb upon the upper part of the left tonsil stopped the bleeding. After a half hour when the thumb was removed bleeding started again as bad as ever. Adrenalin had no effect upon it. The resident could not find the spot, so, thumb-bound, the writer was compelled to stay by the patient, unable to do anything. A tonsil clamp was not obtainable, and the tissues could not be caught with any ordinary forceps. Preparations were made to tie the carotid if necessary. Fortunately one of the hospital laryngologists, Dr. Stout, was able to give his assistance. It was now over two hours since the bleeding began, and when pressure was removed the site of hemorrhage could be plainly seen—the blood flowing in much diminished volume but still in considerable quantities. While the writer controlled the bleeding and sponged, the Paquelin cautery was used to completely sear the upper part of the tonsil and adjacent tissues. It was then possible to stop bleeding by applying adrenalin chloride. The patient had been kept lightly under ether from the beginning of operation because of gagging that occurred as soon as ether was removed; at no time was she in a critical condition, although a large amount of blood was lost. Normal salt solution under the skin and stimulants were given. The patient stayed in the hospital a couple of days and complained very little of sore throat. Remarkably little reaction of any kind followed the cauterization and in a week the child was well and no evidence of the mishap remained.

It is probable that the tonsillar artery was cut close to the basement membrane which prevented retraction. In this case the actual cautery proved a most valuable aid in controlling hemorrhage—whether it would have been equally effective in the beginning is hard to say.

Tonsillar hemorrhage can be controlled by the following procedures according to various writers: Gallic acid 1 part, tannic acid 3 parts, water 4 parts (Mackenzie), 10 per cent alum solution (Kyle). Hemostatic forceps and ligature. Butt's tonsil clamp. Paquelin cautery (Ingalls). Ligation of carotid—external, common and lastly, the internal, if necessary.

*Read before the Section on Laryngology, College of Physicians of Philadelphia, March 16, 1904.

REPORT OF INTERESTING CASES.

BY GEO. F. COTT, M.D.

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Localized Pachymeningitis. Some time ago I was asked by Dr. Taggart of Salamanca to see a woman aged 44, who had been sick in bed for five weeks with pain in ear, deep seated. For this pain she had been taking among other things doses of 20 gr. salphine with morphine, but the pain continued. She was very anæmic, jaundiced, and emaciated. In fact, she was dying from exhaustion. The doctor found her in this condition after she had been treated for five weeks by two homœopaths. He recognized the cause at once and told the family what would be necessary to relieve the patient. I found her as stated. She was given chloroform and the ear explored. The drum-head was destroyed and the ossicles gone but no discharge. In fact, patient said she had never had any discharge that she knew of and was always well until this pain in her ear five weeks ago. I suspected localized meningitis dependent upon ear lesion, which, having been latent for about forty years or more, suddenly developed and infected the meninges. A radical operation was performed upon the patient who was lying upon the kitchen table, with the assistance of Drs. Taggart and Beals. An acetyline lamp was the only light. The mastoid and middle ear were cleaned out, all dead bone and debris removed, all of which took an hour and a half. Then the patient was put to bed. She had a fairly comfortable night with considerable pain; she made a gradual and complete recovery. In a week she was able to sit up. I saw her again six months after the operation and found her in her usual good health, but with considerable pain over her ear. This I found was due to her general neurotic condition and was confined to the scalp alone, which was quite painful to the touch. The ear was perfectly dry.

This was a peculiar case. No history of discharge at any time, pain deep-seated in the ear, no inflammation discoverable, yet denuded bone everywhere with foul granulations. The patient certainly had middle ear inflammation, which ended in suppuration, when she was a child but had forgotten all about it. The early suppuration caused destruction of the bonelets and in part the interior of the temporal bone. During the five weeks of her sickness she was treated with douches and anodynes. She was so far gone that I had very little hope for her. The case illustrates again how easily an old trouble

may be relighted and, without surgical intervention, will speedily cause death. Those cases of brain abscess, subdural or extra-dural abscess sinus thrombosis and meningitis ending in death, the cause of which is unrecognized, may readily find explanation by examining the ear and finding old dried caries, which need but an acute pharyngitis to infect the old plant rapidly by way of the eustachian tube and without any ear symptoms, affect the brain.

Rhinorrhœa. Mrs. L., aged 30, born in this country, married, no children, emaciated, weight 100 lbs., asthmatic cough. Has been troubled with an excessive watery secretion from the nose for the last fifteen years, periodically, commonly brought on by fast walking. It never occurred when perfectly quiet, except while having a cold. Always breathed through the nose. Fifteen years ago had gripe, which was severe, confining her to her bed for two weeks. Ever since then, the rhinorrhœa prevailed. Upon examination a small polypus was found in each nasal chamber. These were removed and no rhinorrhœa has since occurred. This was simply a case of reflex disturbance. Patient could bring on an attack at will. Very slight fatigue or slight annoyance was sufficient to produce the flow. When first she came under my care she looked haggard and careworn. Since removal of polypi and cessation of rhinorrhœa she looks bright and cheerful. This was two years ago, and she has remained practically well. When the discharge had once begun, it continued long enough to saturate two or three handkerchiefs and the consistency was always that of water. After having taken a cold, as she expressed it, this gradually became turbid, which continued until the cold had left her. This latter condition had, no doubt, been brought about by the involvement of the accessory sinuses. Mrs. L. has since developed tuberculosis.

Cyst of Brain. A man aged about 50, widower, the father of six children, was brought to Buffalo from Ransomville, N. Y., by Dr. Hurd, with the history of having been ill for several months with headache over the left side. When quite young, he had middle ear suppuration following scarlet fever; however, it had not given him much trouble until lately, when the ear discharged pus. Even this had suddenly stopped about two weeks ago. While walking he would suddenly develop diplopia and fall toward the right side. This however, passed off again in a few seconds. Temperature was subnormal and pulse 50. No distinct chill but had as many as twenty chilly sensations a day. Examination of ear showed caries of tympanic walls and attic; from this protruded a small granulating mass. Patient looked despondent and suffered sufficiently to consent at once to whatever was necessary for his relief. The diagnosis of either

subdural or brain abscess was made and patient sent to Riverside Hospital for further observation and at all events to clean out the middle ear. Symptoms for the next two days were the same with intense headache, chilly sensations and projectile vomiting, never feeling sick to the stomach, as he said, always rational, except at times slow cerebration and deaf enough to require a loud voice to attract his attention. He was given chloroform and the radical operation performed. After the ear was cleaned out, a sinus was looked for with a probe but nothing found. As there seemed but little doubt that an abscess was somewhere in the temporal lobe, it was deemed wise to open the skull. A button $\frac{3}{4}$ in. in diameter was removed, $1\frac{1}{2}$ in. above the center of the external auditory meatus, the brain immediately bulged through the opening. The dura was raised and a hypodermic needle introduced. When one-half inch deep a syringe full of clear watery fluid was withdrawn, but no pus found. The brain was then further explored without result. The cortex was then slit for half an inch and a sharp spoon introduced which entered a small cavity. This was gently scooped out and a quantity of apparently broken down brain tissue removed. During the following night while the nurse was attending an other patient for a short time, the patient got up and walked to the toilet room 30 feet away. This he repeated again during the week. However, this did not seem to bother him very much. Two days later the wound was dressed and the drain removed. Sunday, four days after the operation, the patient felt very good, telling me his symptoms were all gone and wanting to know when he could go home.

He did well until the following Thursday, nine days after the operation, when during the night he passed into a condition of coma. Friday the dressing was removed. The middle ear cavity looked healthy but the brain again bulged. It was explored as before but nothing more could be found. The skull was also opened above the cerebellum but nothing found. Then as a last resort the lateral ventricle was tapped and nearly a dram and a half of fluid was withdrawn. This, however, made no impression upon the patient's condition at all, and he died at 10 o'clock Friday night. Although the family physician, by my urgent request, tried hard to get permission to open the skull post-mortem for the purpose of verifying the diagnosis as well as to ascertain whether other pathological conditions might be found, the family strenuously objected and so a grand opportunity was lost. Why the symptoms all improved for nine days after the first operation and then coma suddenly set in, I cannot explain; for the cavity or sac was not refilled nor was there further

infection from the ear. There may have been an abscess in the temporo-sphenoidal lobe of opposite side, but there were absolutely no symptoms after the first operation to indicate that. We were left totally in the dark concerning the cause of the coma, and, as no post-mortem examination was allowed, it will ever remain a mystery.

Carcinoma of Esophagus. A woman, aged 68 years, well built weighing 180 lbs., living at the Old Folks' Home on Walden Ave., was brought to my office complaining of some difficulty in swallowing during the last few weeks. Examination showed nothing. Patient was well nourished and looked the picture of health, not complaining of losing weight. At times she could not swallow a drop of water, I suspected malignancy but as there were no other symptoms except occasional difficulty in swallowing, I was at a loss as to the real cause of the stricture. I introduced an electric bougie, turned on the current and had the satisfaction of seeing the bougie pass through the stricture. Patient was then given a teaspoonful of water which passed down in a very short time. This procedure was repeated several times at intervals of two or three days. At the fourth sitting the patient collapsed and had to be inclined on an easy chair. Her heart was very rapid and she was unable to sit up. After several hours she recovered sufficiently to be taken home in a carriage. However, improvement did not last long. During the night she rapidly grew worse and died the next day. Post-mortem examination showed carcinomatous stricture of oesophagus, likewise a similar growth at oesophageal orifice of the stomach. Pericardium showed recent inflammation, which was probably due to infection from the bougie. Considering the large growth, it was remarkable there were no symptoms but the one mentioned. Patient would certainly have starved, but as she was well rounded out it would have been a very slow process. Her coming torture was prevented by the bougie.

Cystic Polyp. Boy, aged 10, was troubled with difficult breathing due to complete occlusion of right nasal cavity. This condition was noticed for a long time, several years in fact. Upon examination, I found a polyp closing the entire cavity. As I could see but one end of it, I could not determine its length nor attachment, but as polypi are rather rare in children so young, I expected to find a very ordinary kind of growth. I introduced a snare and made fast, then by a fairly vigorous jerk the tumor came away with a gush of fluid. It proved to be a cystic polyp, and measured five and one half inches in length.

531 Mooney Building.

SARCOMATA OF THE NASAL SEPTUM.

BY RICHARD H. JOHNSTON, M.D., BALTIMORE, MD.

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Sarcomata in the nose are rare as compared with such growths in other parts of the body and with intranasal benign tumors. M. Schmidt in the examination of 42,635 patients found 11 cases of sarcomata, six of which were of that peculiar class known as lymphosarcoma. In the Berlin University Polyclinic, 10 sarcomata were seen among 27,600 cases. The statistics of all large hospitals give about the same proportion of such growths. In a special practice of some years, I have seen only one such case among several thousand patients examined. Competent observers have given the proportion of intranasal sarcomata to all other nasal and throat cases examined as 1 to 2,700. In my own experience, this estimate is far too high, the case seen by me being the only one in the examination of 10,000 or 12,000 patients. In looking up the literature on the subject, I have been struck with the rarity of these tumors on the nasal septum. Up to 1896 Lange of Copenhagen was able to collect only 13 cases of sarcoma of the septum. Since then the more careful examination of nasal tumors has increased the number, until at the present time there are about 60 such cases on record. It is difficult to give definite statistics, since some tumors, reported as malignant, have, in the course of time, revealed themselves as benign. When we consider the fact that the septum is the most exposed part of the nose and subjected to injuries of every kind, it is strange that malignant neoplasms are not oftener seen in this locality. It is probable that the first sarcoma of the nasal septum in medical literature was recorded by Paletta in 1820. A tumor of the septum was described by this writer, the symptoms of which corresponded to later observations of such growths. Since no microscopical examination could, at that early date, be made, the diagnosis must be held in reserve. I have therefore not included this tumor in the cases which I have been able to collect from the literature. The first authentic case where the diagnosis was clearly established by the microscope is perhaps that of Mason (1875). Since then the number has grown slowly. In an article written in the early part of 1903, Grosjean collected from the literature of all countries 178 cases of intranasal sarcomata, pure

or associated with fibromata. The proportion of these growths on the septum was about 1 to 3.

Varieties. The most common form of sarcoma found on the nasal septum is fibro-sarcoma or spindle cell sarcoma. These tumors are not always easy to diagnose even with the microscope. Benign polypi can, through leucocyte infiltration and fibro-blast like cells, present a picture very like sarcoma. Simple granulomata, syphilomata and even tuberculomata can, when the whole tumor is not carefully examined, in certain parts, simulate spindle cell sarcoma. The genuine fibro-sarcoma grows oftenest from the periosteum or perichondrium of the nose, especially the septum and presents as a rule a broad base. One case is recorded where the tumor grew from the mucous membrane. The next variety in point of frequency is the myxo-sarcoma, the seat of election of which is the septum. Some cases, which have been recorded as such, belong to the so-called bleeding polypi of the septum. The round cell tumors are probably next in point of frequency. It is difficult to tell whether the mucous membrane, bone or cartilage is the original seat of the growth. Lymphosarcomata are closely allied to the round cell form. Very few melanotic tumors have been reported. Kummel saw one where the patient died of a general melanosarcomatosis. The pigment in these cases is probably derived from the olfactory region or the blood—previous hemorrhages. Cozzolino has made some very interesting experiments as to the origin of the pigment which will be referred to later. Giant cell sarcoma of the septum is very rare. Masson reported a doubtful case with its point of origin in the bony septum. Nardi has made a special study of angiosarcoma of the septum. He has collected five such cases from the literature and adds one seen by himself. Before taking up the general symptomatology, ætiology, etc., of sarcoma of the nasal septum, I wish to report the case which occurred in my practice. The patient was carefully watched from day to day and presented some features out of the ordinary run of such cases which may prove of interest to those of us who are working along pathological lines in our specialty. In Sept., 1903, Mrs. S. E. M., aged 70 years, consulted me at the Presbyterian Eye, Ear and Throat Hospital for complete nasal obstruction. The family history of the patient was as follows: Her grandparents on both sides lived to be old—causes of death not known. The father died at the age of 80 years of smallpox. The mother when she was 76, developed a cyst in the left abdominal cavity, which was the cause of her death two years later. One brother died of aneurism of the aorta at 70 years of age. A sister, 23 years old, died from the effects of pres-

sure of a large tumor on the left side of the neck. The patient herself suffered from the diseases incident to childhood. She then enjoyed good health until she was 45 years old when she had pneumonia. Five years later while nursing her father, she contracted smallpox from which she made a good recovery. Since then she has remained well until the beginning of her present trouble. She lost her husband in 1861 since which time she has lead an active, useful life as a trained nurse. Her present illness began about 10 months ago. The latter part of November, 1902, while nursing a patient, she contracted what she supposed was a "cold in the head." She used the usual home remedies with no benefit. The symptoms continued and two months later, early in Feb., 1903, she noticed a small swelling above



Sarcoma of Nasal Septum.
Infiltration of Cartilage with Cells.



Sarcoma of Nasal Septum.
Section of Tumor.

the left clavicle. A few days later she counted nine such swellings, which was in front of the left ear. At this time her nose was very much obstructed. Becoming alarmed at the presence of these enlarged glands and at the persistency of her nasal symptoms, she consulted a physician, who did not attach much importance to her trouble. He attempted to cure her nasal obstruction by passing a rubber tube through the affected nostril. Later she fell into the hands of two quacks, one of whom cauterized her nose. Before coming to Baltimore, some 7 or 8 weeks ago, she consulted a surgeon who expressed the opinion that the enlarged glands were tubercular and advised their removal. At this time practically all the anterior and lateral cervical glands were enlarged. I saw the patient the first time Sept. 24, 1903. She entered the Presbyterian Hospital com-

plaining of complete nasal obstruction. She stated that she had no pain but the inability to breathe through the nose made her very miserable. In reply to the usual questions, she gave no history of tubercular or specific infection. She had had no hemorrhages from the nose. Inspection of the face showed a decided swelling of the left side of the nose. The right side appeared normal. The pre-auricular and anterior cervical glands were swollen. Neither the nose nor the glands caused any pain on pressure. Examination with the speculum revealed in the right nostril the septum in contact with the turbinates. In the left nostril there was a large pink mass completely



Sarcoma of Nasal Septum. Author's Cases.

blocking up the normal opening. The probe could be passed above below and external to the mass for some distance but internally it seemed to be attached to the septum from the roof to the floor of the nose. To the touch the tumor was rather hard, non-movable and bled easily. There was no ulceration. Suspecting that the growth was malignant, I immediately removed a small piece with the cold snare for microscopical examination. The hemorrhage following the operation was easily controlled by pressure. The patient was given KI and told to return in two days. The tissue was hardened in formalin (10%) and absolute alcohol. Twenty-four hours later,

sections were cut and stained with hæmatoxylin and eosin. Histologically the specimen was made up almost entirely of round and spindle cells. A diagnosis of sarcoma was accordingly made. Dr. J. L. Hirsch, pathologist of the Univ. of Md., confirmed the diagnosis. On the return of the patient two days later she complained that several times each night, she was forced to get out of bed and sit by the open window in order to get sufficient air. As she demanded the truth, I told her that recovery was impossible, since all the diseased glands could not be removed and that we could only hope to make her more comfortable by removing pieces of tissue from time to time. She then expressed a desire to come in to the hospital where she could be nursed properly. Under cocaine anæsthesia several pieces of the growth were removed. The recurrence was so rapid, however, and the nervous shock following the operations so great that the attempts to free the nostril were abandoned and palliative treatment instituted. Oct. 16 the nose was swollen on both sides, much more on the left than on the right. The swelling on the left extended outward under the eye. The lower lid was somewhat cedematous from pressure and the lachrymal apparatus involved. The face was gradually assuming the "frog face type" so characteristic of the late stages of this disease. The cervical glands had grown much larger. The posterior cervical glands were enlarged in descending chains. The axillary glands had assumed the proportion of pigeon eggs. Both the nose and glands were tender on pressure. From this time on the patient grew rapidly worse and was forced to take to her bed Nov. 1. The swelling of the nose and glands reached an enormous size. Dec. 15, death relieved the patient of her sufferings. In the month of October the case was exhibited before the medical and surgical section of the Medical and Chirurgical Faculty of Md. While all present concurred in the diagnosis of sarcoma, the opinions regarding the glandular enlargement were varied. In my opinion the swellings could be nothing but metastases from the original tumor in the nose. The pieces of tissue which were removed from time to time were subjected to careful histological examination. All the sections were very much alike consisting of collections of large and small round and spindle cells with little or no connective tissue. The autopsy was held the day of death by Doctors Stokes and Darling of the city health department. The notes of the autopsy and of the microscopical examination of the different tissues were loaned me by them.

Findings at autopsy. Lungs. Apices of both lungs show gray, depressed, irregular scars of healed Tuberculosis. Lower lobes of

both contain excessive amount of fluid but no solidification is present.

Spleen. Greatly enlarged. Veins of capsule greatly distended. Soft and splenic pulp greatly increased. Weighs 18 oz.

Liver. Smaller than normal. Of a pale, yellow brown color showing some passive congestion. Weighs 32 oz.

Kidneys. Surfaces slightly granular. Kidney markings normal.

Gall Bladder. Contains irregular, marble size, almost black mass.

Heart. Normal.

Face. On the left side of the nose extending over on the left superior maxillary bone, there is a large, red swelling which upon removal of the skin shows no superficial attachment. The tumor is about the size of a hen's egg. The growth seems to have begun either in the mucous membrane or cartilage of the septum of the left side and to have then involved the left nasal and outer portion of the left superior maxillary bone. The septal cartilage has also become infiltrated by the tumor. The superior maxillary bone bounding the anterior surface of the antrum is softened by tumor infiltration. The tumor has not grown through the septum into the right side of the nose. The inferior turbinate is involved. The growth has not invaded the antrum.

Brain. There are a few patches of arterio sclerosis in the vessels at the base. The pia and arachnoid are somewhat cedematous. Otherwise normal.

Eyes. Show no tumor involvement.

The cervical, preauricular, axillary and supraclavicular glands are enlarged.

Microscopical examination. Section from face near nose. The tumor consists of cells varying greatly in size, a few are almost as small as lymphocytes while others are quite large. They are round, ovoid, spindle shaped and stellate in appearance. A few capillaries and small blood vessels are present in the growth and in places the tumor is traversed by thick bands of connective tissue. The capillaries are dilated but they are lined by flat endothelial cells. There are a few scattered hemorrhages and groups of yellowish brown, coarsely granular pigment. There are also large areas in which the cells have lost the power of the nuclei to retain the stain but the protoplasm still stains by eosin.

Cartilage of septum. With the exception of a large central band of cartilage, the septum in the situation of the tumor has been transformed into true tumor tissue. The stricture of the cells does not differ from that described above. But here and there throughout

the tissue can be seen the ducts of mucous glands and arteries showing marked obliterative endarteritis. The tumor might be described as a mixed cell sarcoma.

Cervical lymph node. The gland has become completely transformed into tumor tissue and shows no indication of normal lymphatic structure.

Spleen. Under the microscope the enlargement of the spleen is seen to be mainly due to a proliferation of the endothelium lining the splenic spaces. These cells have large vesicular nuclei and are surrounded by a large amount of eosin staining protoplasm. There are very few lymphocytes present but an exceedingly large number of multinuclear cells can be seen in the splenic spaces. There are certain areas in which the spaces are distended by red blood corpuscles and there are a few polymorphinuclear leucocytes present.

Lung. Healed tuberculous area. The pleura is greatly thickened and contains many small groups of cells resembling small lymphocytes. There are also many scattered groups of pigment cells containing a black pigment. From the pleura a number of thickened connective tissue bands pass inward throughout the lung tissue. This connective tissue seems much younger staining light blue with hæmatoxylin. Some of the alveolar septa are thickened and the perivascular and peribronchial connective tissue is increased in thickness. There are many new formed blood vessels in this loose, wavy, newly formed tissue which also contains irregular projecting tubules with cuboidal epithelium which are probably projecting bronchi. It may be well to state that although the cervical and axillary glands were greatly enlarged, no metastases were found in any of the internal organs. It was expected that sarcomatous infiltrations would be found throughout the body. The diagnosis of sarcomatous degeneration of the glands was confirmed by the microscopical findings. The selections from the growth and from the glands examined by myself correspond in every respect to those made by Doctors Stokes and Darling. In the history of the patient, I omitted to say that the blood count showed no leucocytosis. The diagnosis of the case is mixed cell sarcoma of the nasal septum with metastatic, sarcomatous degeneration of the anterior and posterior cervical, the preauricular, the supraclavicular and axillary glands. Such cases are exceedingly rare. I think there can be no doubt that had the patient lived long enough, there would have been a complete involvement of all the glands in the body as well as metastases of the internal organs. The growth represented one of the most malignant forms of intranasal sarcomata, the patient dying in about one year

from the beginning of her trouble. The photographs of the patient were taken in October when the nasal and glandular swellings were not so pronounced as later. The localized enlargements, however, can be readily seen.

As in other parts of the body, the aetiology of sarcoma of the nasal septum is obscure. Some observers maintain that they develop from benign growths, particularly nasal polypi or from the irritation produced by the same. Since all forms of tumors are rare on the septum, benign growths themselves can play no part in the development of malignant neoplasms in this particular locality. This theory will be discussed more fully later as bearing upon the development of intranasal malignant growths in general. It is possible that the irritation of the septum caused by the presence of nasal polypi may be a causal factor in some cases. This constant irritation probably produces an inflammatory reaction, which in the course of time, may give rise to a perichondritis or periostitis followed by the formation of a malignant neoplasm. In some cases they seem to follow chronic inflammation or irritation of the mucous membrane. Newman saw an adenosarcoma in a man whose septum had been perforated from working in a chrome factory. Here, the growth seemed the direct result of the irritation. In a few cases a slight nasal disturbance has preceded the formation of sarcoma. Specific disease has been given a place in the production of sarcoma, probably due to the fact that the differentiation between the two conditions is at times extremely difficult. There are not a few observers who lay special stress on traumatism as a common cause of sarcoma. I think in connection with this theory, it is only necessary to say that traumatism can play a very insignificant part in the formation of sarcoma of the septum. The septum is exposed to injuries of all kinds but sarcoma of the septum is rare. Age has apparently no effect on the development of sarcoma. Schmiegelow and Monse have reported cases in children of two years of age while my case was in a woman of 70 years. Grosjean says that it occurs oftenest in young people. Statistics show that females are affected oftener than males. Vernuil has advanced the theory of heredity in the development of intranasal malignant growths.

Symptoms. The debut of the affection is nearly always insidious. Ordinarily epistaxis is the first symptom that attracts the attention of the patient and causes him to seek medical advice. The hemorrhage may be slight or severe. In some cases it may endanger the life from loss of blood. Unfortunately, it is not a constant symptom and valuable time is lost before the physician has an opportunity to diag-

nose the trouble or to remove it by a comparatively simple operation. As a rule the highly developed cellular tumors bleed easiest. Recurring epistaxis in elderly people should always arouse suspicion of a malignant growth. A direct result of frequent hemorrhage is anæmia, the extent of which of course depends on the amount of blood lost. Another symptom is the gradually increasing obstruction of the nose. There may be in the beginning only a sensation of "a cold in the head." The feeling of inability to breathe freely through the nose increases gradually until finally nasal obstruction becomes complete. This gives rise to mouth breathing and dryness of the mucous membranes of the mouth and throat and a feeling of inability to swallow. The nasal obstruction is also responsible for the nasal or dead voice which is heard in all these cases to a greater or less degree. Anosmia is present sooner or later. The obstruction in the nose prevents the odors from reaching the nerve endings and anosmia results. These are the chief subjective symptoms. If the tumor is large enough, inspection usually shows more or less swelling of one side of the nose. On examining the nostril with the speculum, the tumor mass is seen and its location can be determined by the careful use of the probe. The color of the tumor varies according to the variety. There is a fetid discharge which at first is clear mucus, gradually becoming brown, red or grayish-yellow and sometimes bloody. Probably the most striking symptom of intranasal sarcomata is the steady growth and the tendency to invade some neighboring cavity or to break through the skin externally. Thus, if the growth springs from the nasal bone or the ethmoid region, it tends to break through into the brain. This accident may occur with no clinical symptoms. Cases have been recorded where in operations for these tumors, the dura was found exposed for quite an area with no symptoms. On the other hand symptoms of brain abscess or meningitis may suddenly develop. If the breakage is behind in the sphenoidal region, symptoms are early and marked. The optic, the abducens, the oculomotor, the trochlear and the trigeminus nerves are affected in the order named, producing a group of symptoms characteristic of pressure at the base of the brain. Here, too, brain abscess or meningitis can develop. Tumors, growing from the septum, have a tendency to break through into the orbit or outward. This tendency was shown in the case seen by me, the patient dying just before external rupture occurred. According to the point of rupture into the orbit, the eye is pressed sideways or forwards. The movements of the eyeball suffer correspondingly as the internal rectus, the inferior rectus, superior oblique, etc., are involved. From the pressure of the

growth the optic nerve sometimes becomes atrophic. The lachrymal canal may be compressed giving rise to epiphora. Such tumors sometimes break into the frontal sinuses and spread out in these cavities. In Hillman's case, the mass broke through the roof of the frontal sinus into the brain. Sometimes there is an extension of the growth into the naso pharynx causing pressure on one or both Eustachian tubes and subsequent acute inflammation in the middle ears. The irritation in the naso pharynx produces an increased secretion of mucus which adds to the troubles of the patient. If the tumor projects from the nostril, as is sometimes the case, it invariably ulcerates and is covered with dry, yellow or bloody scales and bleeds easily on touch. Tumors remaining in the nose do not ulcerate so often. The round cell varieties nearly always becoming necrotic and this necrosis, extending down into the mass, gives rise to extensive, thick, brown red or gray brown masses with an offensive odor. A rare symptom is the enlargement of the cervical and other glands in the body. In my case this symptom was pronounced. Chronic bronchial trouble and asthmatic attacks tend to make the condition of the patient more miserable. As the growth increases in size, the swelling of the face becomes more prominent and the eyes sometimes are projecting as if they were being forced out of the orbits, giving rise to the co-called "frog face" deformity, which once seen can never be forgotten. In the beginning of the trouble, the patient may complain of some pain but usually this symptom is not pronounced until the late stages when it may become well-nigh unbearable. In the late stages of the disease, general symptoms such as fever, delirium, etc., may supervene. Pathology. All varieties of sarcoma occur in the nose. The general classification of these tumors is comprised under the following head, viz: Small round cell, large round cell, small spindle cell, large spindle cell. Under these general forms come the sarcoma encephaloid, which is a soft tumor of light rose color of rapid extension and made up of embryonic, round cells, containing nuclei and nucleoli; the myeloid or giant cell sarcoma, made up chiefly of spheroidal or fusiform cells with a characteristic feature of the presence of multinuclear or giant cells having usually a soft consistency and a red color; fibrosarcoma in which fibrous tissue predominates, generally hard to the touch and slow of growth; angiosarcoma, a tumor made up of cells and blood vessels of various sizes; melanotic sarcoma, consisting frequently of spindle cells and characterized by the presence of brown or black pigment in the cells; myxosarcoma, resulting from a mucous degeneration in the tumor; there are also osteo, chondro, and adenosarcoma, the composition of which is indi-

cated by the name. Mixed cell tumors are also found being combinations of round, spindle and other shaped cells. Sarcomata are usually quite vascular. These tumors can undergo fatty, mucous and hyaline degeneration. The pathological changes in the tissues around a sarcoma are produced by the infiltration of the cells and by erosion from the pressure of the growth. Bone is sometimes softened and absorbed by the progressive increase in size of a sarcomatous tumor.

Diagnosis. In the beginning of the growth, the diagnosis may be very difficult unless a piece large enough for microscopical examination can be removed and even then in some cases, the pathologist is by no means certain that the section is sarcomatous. Knight records a case that had been pronounced malignant by an expert microscopist but a liberal use of KI caused the disappearance of the mass. No doubt others have had the same experience. It may be said in the beginning that any tumor seen on the septum should be regarded with suspicion of malignancy. The liquid tumors of the septum are hæmatoma and abscess. These are characterized by a bulging of the two sides of the septum and by fluctuation. The mucous membrane covering them is usually inflamed and of a deep red color. Certain forms of sarcoma present fluctuation as the encephaloid. In a patient seen by Rendu, a tumor presented on both sides of the septum and fluctuated. Incision, however, gave only a drop of blood and more careful examination showed the swelling to be an encephaloid tumor. The history of the case in hæmatoma and abscess would help to make the diagnosis. If the tumor is solid, we must think of a foreign body or a rhinolith, papilloma, fibroma of the naso-pharynx extending into the nose, mucous polypi, bleeding polyp of the septum, angioma, adenoma, chondroma, osteoma, rhinoscleroma, tuberculoma, lupus, syphiloma and carcinoma. Foreign bodies and rhinoliths are usually gray in color with small black spots and uneven surface, covered with muco-pus. Sometimes they are covered with granulations and the diagnosis is made more difficult. Careful cleansing and the use of the probe will make the diagnosis. Papilloma is easily told by its uneven surface with the cauliflower like vegetations. The fibroma of the naso pharynx can be detected by palpation of the naso pharynx—the mass of the growth can be felt with the finger. Inflamed mucous polypi could scarcely be taken for sarcoma because they are exceedingly rare on the septum. In other parts of the nose, the mistake has occurred. Bleeding polypi of the septum can be taken for sarcoma and it is probable that this has happened in some cases where the microscopical examination has been neglected. These tumors are usually situated on the anterior

inferior part of the cartilaginous septum. They vary in size from a pea to a pigeon egg and are seen much oftener on the left than on the right side. They are distinctly sessile, rarely pedunculated. The color varies from a bright to a deep red. The most important point in the differentiation is the fact that they show no disposition to spread while this is a striking feature of sarcoma of the septum. Angioma is rarer than sarcoma and of a deeper red color. The pure adenoma can only be diagnosed from sarcoma by means of the microscope. In the cases of Robin and Verneuil the diagnosis of adenoma was not made until the tumors were removed. It occurs much more rarely than sarcoma of the septum. Chondroma grows very slowly and does not infiltrate the surrounding tissues. It is, moreover, a disease of the young. Osteoma can hardly be confounded with sarcoma on account of its hardness and from the fact that it never bleeds. Rhinoscleroma forms a thickening on the septum which increases rapidly into a red, fungous or papillomatous mass. It never shows a disposition to become malignant in the true sense of the word. Tuberculosis forms a vegetating tumor which has the appearance of malignancy; but the early ulceration, the discovery of tubercular lesions in some other part of the body and inoculation of guinea pigs will prevent error. Lupus of the septum shows a vegetating mass which presents red, indolent ulcerations, the bases of which are irregular and covered with grayish granulations. There is no discharge from the nose. Syphilis causes from time to time the formation of tumors on the nasal septum which simulate sarcoma. I have already cited the case of Knight in which KI caused the disappearance of the sarcoma. Castex has reported another similar case. Mistakes have also been made in the other direction of calling sarcoma specific disease. Lang and Gerard-Marchant have seen cases where the diagnosis of gumma was made. Both tumors, however, were sarcomata. These mistakes emphasize the importance of the internal administration of KI in all suspicious nasal tumors. Carcinoma is essentially a disease of advanced life. This is not a strong diagnostic point between the two tumors because quite a number of sarcomata have been seen in the old. Carcinoma is rarer than sarcoma and the general condition of the patient is worse. There is much greater likelihood of glandular involvement, progressive weakness and finally the cancerous cachexia. Sarcoma is more apt to cause epistaxis. Carcinoma ulcerates earlier than sarcoma and recurs with much greater promptness. The variety of the sarcoma can only be diagnosed with the microscope. The seat of the growth can nearly always be told with certainty with the help of the probe.

I feel that the diagnostic signs of sarcoma of the nasal septum would not be complete without a short description of the pathology of the tumors which are most likely to be taken for sarcoma. Under the microscope a tuberculoma presents giant and epitheloid cells, tubercles and sometimes areas of caseation. Tubercle bacilli are seldom found in sections from the septum. The most striking feature of syphiloma is the great increase in size of the walls of the blood vessels, especially the arteries. These changes should be carefully looked for. In rhinoscleroma the detection of the bacillus which causes the disease makes the diagnosis. This bacillus closely resembles the pneumobacillus of Friedländer. In lupus the microscope shows small spheroidal cells mixed with larger so-called epitheloid cells and sometimes giant cells. Tubercle bacilli in small quantities can sometimes be found at the seat of inflammation.

Prognosis. The prognosis of sarcoma of the nasal septum is grave but less so than in other parts of the body. The prognosis depends upon the character of the growth, the seat of the growth and whether the tumor is in the operable or inoperable stage. The round cell forms present the worst outlook. They grow more rapidly and infiltrate the surrounding tissues to a greater degree than the other forms. Next in point of malignancy comes the fusiform cell variety. As regards recurrence and infiltration they stand very near the round cell form. Lymphosarcoma is very closely allied to the round cell variety. The prognosis of fibro and myxosarcoma is relatively good in that they seem to possess less vitality than the other forms. Myeloid tumors are not very malignant. Strange to say melanotic sarcomata are not as deadly as such tumors in other parts of the body. Lincoln, Heymann and Lincoke have reported cases where the patients lived for years after removal with no recurrence. If the diagnosis is made when the tumor is small, the prognosis is good since the growth can usually be removed *in toto*. If the tumor is large, the difficulty of entire removal is increased and recurrence follows promptly. M. Schmidt claims to have cured all his cases of sarcomata of the nasal septum by the free use of the knife, curette and cautery.

Transformation of benign into malignant growths. Kummel in "Heymann's Handbuch" says that one-seventh of all malignant growths in the nose can be traced indirectly to benign tumors. He means that carcinomata and sarcomata are preceded by nasal polypi in this percentage of cases. But he regards the direct transformation of benign tumors into malignant as extremely doubtful. Other authors do not hesitate to affirm that the change does occur. Würdemann, in reporting a case of sarcoma of the nasal passages, says that

benign neoplasms, especially those of the papillomatous type, tend to be incited into pernicious activity and transformed into malignant growths by trauma, such as cauterization, or rough surgical procedures as forceps operations in the removal of nasal polypi. In his own case, he thinks the original tumor was lymphadenoma and was made lymphosarcoma by trauma in removal. Mackenzie saw a case of apparently benign polypus which at a later date became sarcomatous. He regarded it as a probable transformation. Onodi reported a case where a benign polyp was removed. Some time afterwards a malignant growth developed in the same place. Haring mentions a case of a woman of 26 in whom four months after removal of a polypus evidently benign, the nostril was blocked by a round cell fibrosarcoma. In a patient seen by Mayer, there had been removed from time to time numerous polypi. The nature of the growth apparently suddenly changed and histological examination showed that the tissue was mainly papilliform adenoma with a few cells suggesting sarcomatous degeneration. The pathologist stated in his report that he considered the tumor an adenoma which probably would have become sarcomatous, had it not been removed. The most suggestive case of transformation of a benign into a malignant tumor of the septum in the literature is that reported by Baker. In a woman, aged 49, there was a tumor, as large as a hazel nut, covering the cartilaginous septum. Sections from the growth, examined by several competent pathologists, showed benign adenoma. Later sections, however, revealed a typical adenosarcoma. In this case there was an apparent transformation of a benign into a malignant tumor. Personally, I do not believe that such transformation ever occurs. In the reports of all such cases in the literature, the evidence was not sufficient to prove to my satisfaction that the change actually took place. It is a striking fact that in nearly all the cases, the histological examination of the original growth was neglected and only after recurrence was the microscope resorted to. This very fact tends to cast serious doubt on the transformation theory. In Baker's case, the change seems likely but here again it must remain in doubt because it is not stated that sections from different parts of the growth were examined, and with this evidence missing, I am inclined to think that the tumor contained sarcomatous areas from the beginning. We are all aware that sometimes in epithelioma of the larynx, it is dangerous to trust to one histological examination. Repeated examinations must be made before the microscope gives undoubted proof that the growth is malignant. It is only necessary to cite the case of Emperor Frederick to prove this assertion. Again, adenomata are very closely allied to malig-

nant growths—so much so in their rapid increase in size and their tendency to recurrence that some pathologists are inclined to class them as malignant. M. Bertemes, in a recent work on the epitheliomatous transformation of benign tumors in the nose, says: "Without denying completely the possibility of the epitheliomatous transformation of nasal polypi, we do not think it proven. In our two observations, where the conditions of the examination were particularly favorable, we obtained a negative result. Our conclusion is that the presence of nasal polypi in the old or in those predisposed by heredity, may develop the soil so to speak and facilitate the epitheliomatous degeneration of the nasal mucous membrane." I cannot accept the theory that traumatism exerts any influence in the development of these tumors. Intranasal malignant growths are rare. Nasal polypi are of frequent occurrence and nearly always removed by operation. It seems reasonable that if trauma produced by operative interference could cause such transformation, the number of malignant growths would be materially increased. Again, malignant growths of the septum constitute about one-third of all the recorded cases while polypi on the septum are pathological curiosities. In most cases of sarcomata on the septum, there is no history of traumatism of any kind. With all these facts before us, I think we can dismiss as purely theoretical, the transformation of benign into malignant growths. To those of us interested in pathology, it may be of some importance to know that Cozzolino has apparently proven by experiments that the coloring matter of melanosaarcoma is derived from the hæmoglobin of the blood and not from the pigment of the olfactory region as is supposed by some. In 1869 Virchow wrote that the melanotic tumor consists essentially of a collection of color-bearing cells but it is difficult to decide how the color originates. Cozzolino pursued his experiments on the theory that iron was responsible for the color. He fixed sections of a melanosaarcoma of the nose on cover glasses and treated them with ferrocyanide of potassium and afterwards with chlorinated glycerine and freshly prepared sulphocyanide of ammonium. No iron reaction was obtained. A section treated with sulphocyanide of ammonium and later freed from this with paraffin and chloroform, then washed in 60% alcohol and finally in glycerine showed deep black, almost round extracellular granules. This pigment was not dissolved by treatment with titrated 10% acid solution and alkali solutions. Tissue teased was observed in hanging drops in pure sulphuric acid. The color was soon dissolved in hanging drops in pure sulphuric acid. The color was soon dissolved out of the interior of the spindle cells of the tumor and out of the

red blood corpuscles. Pieces of the tumor were then put in 10 ccm. of pure sulphuric acid and tested chemically for iron. All tests were positive.

Treatment. The medical treatment of sarcomata of the nasal septum can only be palliative and applies to inoperable cases. Schmidt recommends arsenic in these cases where there is no hope of relief by operation. The full details of the treatment will be found in his excellent work on diseases of the nose and throat. In the last stages of the disease morphia will probably be required to relieve pain or to induce sleep. The nourishment must be looked after as well as possible and measures taken to stop excessive hemorrhage. From a medical standpoint not much else can be done. The surgical treatment consists in the removal of the growth by an intranasal or extranasal operation. The intranasal operation is to be preferred since it can be done without an anæsthetic and saves the patient a certain amount of shock. This operation is suitable only for small tumors on the septum which have been diagnosed promptly and where the entire growth can probably be removed. The methods of operating are tearing out with forceps, excision, curetting, cauterizing and electrolysis. Schmidt cured all his cases with a thorough curetting followed by the cautery. He advises the entire destruction of the septum if necessary. Probably the safest operation is the removal of the growth or as much of it as possible with the hot snare. By having the snare at a cherry-red heat, all danger of hemorrhage is avoided. This procedure can be followed by the curette and cautery if necessary. Sometimes the tumor must be removed at several successive operations on account of shock. Pain and hemorrhage can be controlled in these cases by the use of cocaine and adrenalin. It is only necessary to mention the operation of Velpeau to condemn it. He attempted to remove these tumors by squeezing the mass with a pair of forceps. The cautery should be applied not only to the base of the growth but to the surrounding tissues. After the intranasal operation, however performed, the patient should be carefully watched for some time for possible recurrence. Moure advises the use of electrolysis in certain cases. He gives the preference to the bipolar method and does not hesitate to use 50, 60 and 80 milliamperes for 12 or 15 minutes. Several sittings are necessary. The method is used about once a month. The extranasal operation requires a general anæsthetic. There are three methods of operating on intranasal malignant growths. The first method is through the hard and soft palates. It gives free access to the retro-nasal cavity and is useful for small intranasal growths and fibromata of the naso-

pharynx. The second method is the maxillary, which is the resection of the superior maxillary bone. Acolathus of Breslau (1693) was the first to do a partial resection of the superior maxillary. Gensoul of Lyon did the first total resection (1827). The description of this operation can be found in works on general surgery. The third method and the one generally employed in malignant growths of the nose is the nasal operation. Hippocrates incised the soft parts of the nose to make a larger cavity so as to get at tumors invading the nostrils. Chassaignac in the middle of the last century incised the integument of the lateral nasal furrow and, detaching the nasal parts turned them over on the opposite cheek. Then, if necessary, he resected the nasal bones. Lawrence, in 1862, transformed the nasal soft parts into an osteo-chondro-cutaneous flap which he lifted on to the forehead. He made two incisions, beginning at the inner sides of the lachrymal sacs and extending down along the sides of the nose through the skin to meet at the junction of the two nasal halves with the upper lip. Then he divided the maxillary process of the septum and turned the nose on to the forehead. The tumor was exposed and easily removed. Ollier after having circumscribed the nasal parts by an inverted V incision along the base of implantation of the nose, turns the skin flap down. This leaves a gap which can be enlarged with the finger or with scissors cutting in an anterior posterior direction. Duplay, Langenbeck and Baeckel make incisions in the lateral furrow and turn the nose to the opposite side. Verneuil prefers to make a median incision along the dorsum of the nose and to turn the flaps down on each side. The incision has the shape of an inverted Y. He begins the straight incision at the root of the nose and descends until about 1 cm. from the lobule. Here he branches off on either side penetrating into the nostrils. Another (Runge) operation consists in detaching the upper lip from the superior maxillary bone with a knife, breaking the maxillary process of the septum with the chisel and turning the nose up on the forehead, thus giving a clear view of the nostrils. When the tumor is exposed, removal is effected by means of the knife or curette and the cautery. The free use of the cautery to all bleeding points helps to stop hemorrhage which is generally very profuse. I have thought it well to append a list of all the sarcomata of the nasal septum that I have collected from the literature. In this connection the thesis of Eiler and the article of Grosjean's have been of great assistance to me. I sincerely hope that in this article something has been said which will help to conquer a malady so often resisting our best efforts and resulting in the death of the patient.

N ^o .	AUTHOR.	TUMOR.	AGE.	SEX.	RESULT.
1	Paletta	Sarcoma	21	Male	.....
2	Fayrer	Large cell sarcoma	30	Male	Recovery
3	Billroth	Sarcoma .....	.....	.....	Recovery
4	Grynfeldt	Sarcoma	26	Fem.	Recovery
5	Juracz	Sarcoma .....	.....	.....	.....
6	Wasserman	Sarcomatous polyp	35	Fem.	Recovery
7	Wasserman	Sarcomatous polyp	64	Fem.	Recovery
8	Terrier	Fascicular sarcoma	55	Male	Recovery
9	Loumeau	Sarcoma	70	Male	Radical operation
10	d'Agnamo	Sarcoma	11	Fem.	.....
11	Kafemann	Sarcoma	50	Fem.	Recovery
12	Bond	Sarcoma .....	.....	.....	Recovery
13	Milligan	Sarcoma .....	.....	.....	.....
14	The Med. Times & Gaz	Angiosarcoma .....	.....	.....	Recovery
15	Mason	Myeloid sarcoma	67	Male	Recovery
16	Gougenheim	Sarcoma myeloid plaques .....	.....	.....	.....
17	Gougenheim	Giant cell sarcoma .....	.....	.....	.....
18	Delaux	Small round cell sarcoma	45	Fem.	Recovery
19	Hopman	Round cell sarcoma	34	Fem.	Removal
20	Schmiegelow	Round cell sarcoma	14	Fem.	3 recurrences. Death
21	Wassermann	Round cell sarcoma	39	Male	Recovery
22	Dansac	Angiosarcoma, round cell .....	.....	.....	Recovery
23	Newmann	Round cell sarcoma .....	.....	.....	Recovery
24	Lehmann	Round cell sarcoma .....	.....	.....	.....
25	Gougenheim	Angiosarcoma, round cell .....	.....	.....	Recovery
26	Gougenheim	Angiosarcoma .....	.....	.....	.....
27	Seifert	Round cell sarcoma	50	Male	Radical oper. Rec'y
28	Roe	Angiosarcoma	68	Male	Recurrence. Death
29	Dansac	Endothelial angiosarcoma .....	.....	.....	.....
30	Dansac	Angiosarcoma .....	.....	.....	Recurrence in 1 mon.
31	Arslan	Angiofibrosarcoma	63	Male	Recurrence. Death
32	Sendziak	Cavernous angiosarcoma	34	Male	.....
33	Hamilton	Cavernous angiosarcoma .....	.....	.....	Removal
34	Billroth	Spindle cell sarcoma	24	Fem.	Recovery
35	Ficano	Spindle cell sarcoma	24	Fem.	Recovery
36	Katzenstein	Spindle cell sarcoma	25	Male	Recurrence
37	Wygodzinsky	Spindle cell sarcoma	24	Male	Recurrence
38	Calmettes	Fibrosarcoma	30	Fem.	Recovery
39	Jeanselme	Fibrosarcoma .....	.....	.....	Removal
40	Hooper	Fibrosarcoma .....	.....	.....	.....
41	Seifert	Fibrosarcoma	12	Fem.	Recovery
42	Arslan	Fibrosarcoma	26	Fem.	Recovery
43	Pierce	Fibrosarcoma .....	.....	.....	.....
44	Ball	Fibrosarcoma	25	Fem.	Removal
45	Heymann	Melanoalveolarsarcoma	58	Male	Recurrence
46	Dieffenbach	Melanosarcoma	39	Fem.	Removal. Recovery
47	Kafemann	Melanosarcoma	58	Fem.	.....
48	Leriete	Myxosarcoma	40	Fem.	Recovery
49	Vajda	Myxosarcoma	24	Fem.	.....
50	Wassermann	Polyp. Myxosarcoma	17	Fem.	Recovery
51	Wygodzinsky	Myxosarcoma	65	Fem.	Recurrence
52	Seifert	Myxosarcoma	16	Male	Recovery
53	Seifert	Myxosarcoma	23	Fem.	Recovery
54	Hooper	Angiomyxosarcoma .....	.....	.....	.....
55	Cozzolino	Myxosarcoma .....	.....	.....	.....
56	Thompson	Fibrosarcoma	29	Male	.....
57	Eiler	Small round cell sarcoma	35	Fem.	Recurrence
58	Eiler	Small round cell sarcoma	26	Male	Radical operation
59	Compair	Sarcoma	37	Male	Recovery
60	Compair	Sarcoma .....	.....	.....	Recovery
61	Moure	Sarcoma	42	Fem.	Recur. Rad. Rec'y
62	Clark	Myxosarcoma	44	Fem.	Recovery
63	Tilley	Sarcoma	62	Fem.	Recurrence
64	Nardi	Angiosarcoma	26	Fem.	Operation
65	Clark	Osteosarcoma	35	Male	Recurrence
66	Baker	Adenosarcoma	49	Fem.	Operation. Recovery
67	Craig	Sarcoma .....	.....	.....	.....
68	Lewis	Sarcoma .....	.....	.....	.....
69	Ferro	Angiomyxosarcoma .....	.....	.....	.....
70	Cohn	Sarcoma .....	.....	.....	.....
71	Callozzi	Sarcoma .....	.....	.....	.....

Analyzing the above list, we find that the round cell tumors lead with 10. Fibro and myxosarcomata follow with 8 each. Angiosarcoma is fourth with 7. Fifth on the list comes the spindle cell tumor with 4, followed by myeloid sarcoma 3, melanosisarcoma 2, angiomyxosarcoma 2, sarcomatous polyp 2, cavernous angiosarcoma 2, and melanoalveolosisarcoma, endothelial angiosarcoma, myxosarcomatous polyp, osteosarcoma, adenosarcoma and fascicular sarcoma 1 each. The unclassified tumors number 17. The youngest recorded case in the list is 11 years—the oldest 70 years. In the second decade there are 4, from 20 to 30, the largest number in any decade 13, from 30 to 40, 9, from 40 to 50, 6, from 50 to 60, 3, and from 60 to 70, 7. The ages are not given in 27 cases. As regards sex, the females lead with 26 to 18 for the males. In 26 cases no sex is given. Thirty-one patients are recorded as having recovered after operation, while in 14 cases there was a recurrence in a short time or in the course of a few years. In the others the result is not given. It will be seen from the above statistics that the prognosis of sarcoma of the nasal symptom is not so unfavorable. It is to be regretted that complete statistics are not obtainable.

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SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Stated Meeting, April 27, 1904.

FRANCIS J. QUINLAN, M.D., Chairman.

The special feature of this meeting was a Symposium on Tuberculosis of the Upper Respiratory Tract.

PAPERS:

Tuberculosis of the Pharynx...DR. JAMES E. NEWCOMB, New York.
Laryngeal TuberculosisDR. J. W. GLEITSMANN, New York.
Tuberculosis of the Nares....DR. CHARLES H. KNIGHT, New York.

All of the above papers appear in full in this issue of THE LARYNGOSCOPE.

GENERAL DISCUSSION.

DR. WALTER F. CHAPPELL said that tuberculosis of the upper air passages was a subject of great interest to him, more so than any other, and the thoroughly able manner in which this subject had been covered by the readers of the papers left little to be added. He was glad to hear the gentlemen admit the possibility of a primary infection of the upper air passages for it was but a few years ago that laryngologists were "doubting Thomases" regarding this. He remembered well that about two years ago a very prominent gentleman, a member of the Section on Laryngology and Rhinology, would not believe in this possibility unless the case came to autopsy and showed tuberculous ulcers in the larynx without tubercular infection of the lungs. He became convinced that such a condition was possible when there happened an instance of a tubercular meningitis; at the post-mortem there was found, besides the tuberculous meningitis, tubercular ulcerations in the larynx but no lesions in the lungs or any part of the abdominal cavity. Personally Dr. Chappell believed in the possibility of primary tuberculosis of the upper air tract. He had seen one case of tuberculosis of the tongue, the result of some irritation by a tooth, and also one case of primary tuberculosis of the naso-pharynx following an operation for adenoids, and one case of primary tuberculosis of the tonsil; this case subsequently developed tuberculosis of the kidney and, so far as could be discovered by the ordinary methods (post-mortem was not allowed) there was no pulmonary tuberculosis. In

his own experience he had seen three cases of primary tuberculosis of the larynx. Knowing that the tubercle bacilli could invade any part of the system he said he could not understand why some believed primary infection of the upper air tract was impossible and he said that the sooner the laryngologists admitted this the better it would be for the patients.

Regarding the treatment of tuberculosis of the upper air tract it had been his experience that not enough attention had been paid to suitable climates, although he realized that it was not always possible to give patients the best climate. Climates that were suitable for patients with pulmonary tuberculosis would not always be suitable for those suffering from laryngeal tuberculosis. He did not believe that high altitudes were to be desired for laryngeal cases in all instances. The condition of the larynx itself should be the guide in determining which climate to send them. In the early manifestations of laryngeal tuberculosis, without ulceration or, if ulcerations are present, without their being active, he advocated the cold dry climates; but, in the later cases with active ulcerations, he advocated the warm climates and lower altitudes. Of course he did not mean to infer that foggy and very damp climates, with east or north winds, was desirable for these laryngeal cases.

With regard to the surgical treatment he said he was glad to hear what Dr. Gleitsmann had stated in his paper, that in Germany they were not so enthusiastic over it. Personally he used the curette in laryngeal tuberculosis in but two classes of cases, viz., (1) To relieve the dyspnoea when there was a great deal of hypertrophied tissue and, (2), simply to scrape the superficial ulcerations, but without producing hemorrhage on the surface. In the past he said he had had an unfortunate experience in removing with the curette certain masses of tubercular tissue in the larynx; in one case there had been, immediately following the operation, a reinfection with a rapid death. Therefore, he wished to sound a note of warning with Dr. Gleitsmann and advised against the indiscriminate use of the curette in cases of laryngeal tuberculosis.

DR. WOLF FREUDENTHAL continued the discussion and stated that he had never seen a case of primary tuberculosis of the nose, nor in any other part of the upper air tract, and he would not believe in the existence of these primary lesions in such patients unless proven by post-mortem findings. In the three cases reported not one had been proven to be a case of primary tuberculosis, although he recognized the fact that there might be exceptions. He personally had had several cases which were regarded as tubercular and which did not reveal any lesions in the lungs at the time; but later pulmonary lesions were discovered. He said he was not yet prepared to admit that primary tuberculosis of the nose was to be met with, because, for one reason, the Sneiderian membrane is in such intimate contact with the oxygen of the air that the tubercle bacilli, which may have gained a lodgement upon it, are destroyed. Because of this and of additional action of the sun's rays upon the bacilli, he did not agree with the statement made by so many that there was

any special danger of infection by reason of people with tuberculosis of the lungs spitting upon the streets.

The question of primary infection of the *pharynx*, he said had been much discussed. He had studied this question for ten years or more and he did not doubt that infection could take place through the entire lymphatic ring. He wished to again direct attention to the occurrence of primary tubercular lesions in the naso-pharynx and he wished that his colleagues would pay more attention to it than they did.

As to the tuberculosis of the upper air tract in pregnant women, his experience led him to believe that every such woman died after parturition. In such cases he invariably gave an unfavorable prognosis and advised an early interruption of the pregnancy.

Regarding the treatment of tuberculosis of the upper air tract he stated that he had worked with Prof. Krause when he first tried the lactic acid treatment for laryngeal cases about nineteen years ago and he himself had used it for many years. There was no question but that in many cases, lactic acid did good; but he asked, if better remedies were to be had why not use them? The results he had had from an emulsion made of menthol and orthoform were quite remarkable. He said he was once loath to treat these cases of laryngeal tuberculosis; but now with this emulsion he could readily relieve these patients of their dysphagia in from fifty per cent. to sixty per cent. of the cases. He believed the man who would not use orthoform today would be doing his patients an injustice. In many cases he further believed lactic acid should be given up and orthoform tried, as had been done in the Montefiore Home; in this institution orthoform relieved those cases which the application of lactic acid had failed to improve. It seemed to him as if there was a great unanimity of opinion among laryngologists regarding the value of this emulsion.

As to the different electrical rays he had during the past two years used intralaryngeally a great deal the high frequency current and this had helped a good deal. The ray and light treatment he considered yet to be in the experimental stage.

Regarding the surgical treatment he said that he had, in the main, given up the curette in tuberculosis of the upper air passages. When he did have occasion to use the curette it was for one or two reasons, viz., when dysphagia or dyspnoea were present and could not be removed otherwise. For example tuberculous ulcerations in the lower *i. e.* laryngeal part of a flattened epiglottis could not be reached with an emulsion or the like and, in such cases, the removal of the epiglottis brought relief. He did not understand why in the light of recent experience Dr. Chappell should scrape the ulcerations and how it could possibly produce any valuable therapeutic effect. It was clear to his mind that if these ulcerations could be placed at rest, by freedom from pain and the patients thus given a chance to eat and swallow Nature would do the rest. The former is accomplished by the use of orthoform; the latter then follows.

DR. S. A. KNOFF said that it had been his privilege to have been in Paris with Strauss when he examined the nasal cavities of musicians in the Paris Opera House and those of the nurses in the hospitals, and it was surprising how many showed the presence of the tubercle bacilli in the nasal cavities. The large majority of the people examined were non-tuberculous. He thought the frequent presence of tubercle bacilli in nearly all places where many people congregate should teach us the value of prophylaxis. It is a mistake to think that the only source of the bacilli floating in the air is the result of dried and pulverized sputum. While every patient should be made to understand that this is the principal source of the spread of the disease, he should also be taught how to prevent drop infection. There is no such a thing as a dry cough, and though the tuberculous patient may not expectorate, during his coughing spells he is pretty certain to expell small particles of bacilliferous saliva in the form of droplets. The only way to prevent this source of infection is to impress upon the patient the necessity of holding his hand or handkerchief before the mouth.

Concerning Dr. Freudenthal's statement that it was not dangerous for a consumptive to spit on the sidewalk, Dr. Knopf expressed his amazement. The bactericidal action of the sun and air was, of course, known to him, but he thought we should not forget that this action was not instantaneous and that it required hours of exposure before the tubercle bacillus is killed by the air or sun. Furthermore, we have not always sun, and it takes much longer for the bacillus to lose its virulence by exposure to air alone. Again, what guarantee have we that the sputum deposited by the careless consumptive on the sidewalk is not carried away by the soles of our boots or by the trailing skirts of our fashionable ladies long before it has had even a chance to dry? The servant girl who is called to clean such a skirt may be in danger of infection.

Regarding the treatment Dr. Knopf said he was surprised not to have heard anything about the hygienic management of these laryngeal cases. He would insist that the cases of laryngeal tuberculosis keep absolutely quiet, that is to say, put their vocal organs at rest. Such patients should communicate as much as possible by writing; whispering being even more tiresome than natural talking. Next in importance in the hygienic management is to keep the air passages clean and to prepare the patient by cocainization for taking his regular meals in case there is difficulty in deglutition. The cleansing spray after each meal should be insisted upon; the patient can learn to do that himself. If the patient can not be sufficiently nourished by mouth, nutritive enemata should be resorted to. Dr. Knopf believes that a great deal could be done for these unfortunate patients by the hygienic and dietetic treatment instead of or besides the topical or surgical treatment.

DR. W. GLEITSMANN closed the discussion. He said there seemed to be quite a diversity of opinion regarding some of the points raised. Dr. Freudenthal did not believe in the existence of primary laryngeal tuberculosis but Dr. Gleitsmann claimed that there

were cases of such, proven at post mortem, in which no tuberculous disease was found in the lungs.

With regard to the treatment he said that lactic acid was the remedy employed by the majority of rhinologists and laryngologists, but this agent was only employed when there were ulcerations present; this drug had its place in the treatment, for it would relieve the conditions in the larynx, especially when of advanced character. The same statement was applied to the use of the curette in selected cases. He said that if one man can cure these patients with iodoform and lactic acid and the curette in selected cases he did not think we should argue about any one remedy but continue to try and cure the patients.

In answer to Dr. Knopf's criticism he said that he could not enter into the subject of prophylaxis because of the short time at his disposal. The consideration of the hygienic, climatic and dietetic treatment was very essential. Not much had been done during the past year or two in the treatment of laryngeal tuberculosis and he thought that they should unite and follow out some plan of treatment which would insure to them a larger proportion of successes.

The Influence of Artillery Fire on the Hearing.—VASSILIEV.—

Revue Heb. de Laryng., D'Otol. et de Rhinol., July 18, 1903.

The author had studied the effect produced on the organs of hearing by field artillery.

The subjective sensations in the ear, after the discharge of artillery, are changed into noises, whistling and roaring. In some it leaves an effect as if the ear was filled with a liquid, while others hear a noise as of winds in the forest.

The alterations in the tympanic membrane consist of various degrees of hyperæmia; the lines of the vessels are usually found in the region of the fibres of Prussak; occasionally there exists at the same time enlarged vessels with hyperæmia of Schrapnell's membrane; he has seen no cases of perforation.

The author's investigations show that the noises produced by the discharge of cannon lower the faculty of hearing and more especially for the higher than the lower notes. This was demonstrated in 1935 out of 2000 cases. Generally speaking, the noises in the ear disappear in three or four days after the discharge of the cannon.

Among the officers, the author has not observed any affection of the ear that could be attributed to the discharge of artillery. The firing with smokeless powder appears to increase the effect on the ears.

W. SCHEPPEGRELL.

THE LARYNGOLOGICAL SOCIETY OF LONDON.

Eighty-eighth Ordinary Meeting, March 4th, 1904.

P. McBRIDE, M.D., F.R.C.P.Edin., President, in the Chair.

Case of Immobile Right Vocal Cord in a Youth æt. 19.

Shown by DR. FURNESS POTTER. The patient came under observation complaining of symptoms of giddiness and stiffness in the nose. The detection of slight huskiness led to examination of the larynx, which showed that the right cord was fixed in the middle line. The arytenoid was swollen and red, the mucous membrane of the nose and naso-pharynx swollen and hyperæmic, and there was much thick muco-pus adhering to the posterior pharyngeal wall. The tonsils were enlarged, and presented the appearance of superficial ulceration. There was an enlarged gland in the right side of the neck, and glands could be felt in both groins. The patient had a cough, and thought he had become thinner recently. On examination of chest no definite sign of disease was discovered—sputum examined, but no tubercle bacilli found. The exhibitor was of that opinion that the immobility of the cord was due to infiltration, most probably tuberculous, involving the crico-arytenoid articulation. The swelling in the arytenoid region had increased during the last month.

Case of Infiltration of Larynx Involving both Crico-arytenoid Joints, with Indurated Ulcer on Tongue.

Shown by DR. FURNESS POTTER. The patient, a man æt. 60, began to suffer some difficulty of breathing about Christmas, 1902; the voice became husky about the same time. He had some difficulty in swallowing on several occasions. When first seen a month ago he complained of painful sensations on the right side of the throat.

On examination a hard, ulcerated swelling was seen on the edge of the tongue, far back. The right vocal cord was fixed in the middle line (or a little external to this) and almost invisible, being obscured by the swollen ventricular band. The arytenoid region was involved in a mass of infiltration, which included right ary-epiglottic fold and right ventricular band. The left cord was markedly hampered in abduction, the excursion outwards on deep inspiration being very limited in extent. On phonation the left came into apposition with the right cord. The size of the glottic aperture was much diminished, and there was marked stridor on inspiration. As the patient had had attacks of severe dyspnoea, it was considered unsafe to allow him to go about in this condition, and accordingly tracheotomy was performed. No glands were detectable in the neck. He had had a "sore" about forty years ago; but had no trouble, as far as he could remember, which would lead to a suspicion of constitutional infection.

A section had been taken from the ulcer on the tongue and submitted to microscopic examination. However, Dr. Kelson, who had kindly examined it, reported that though suggestive of epithelioma, the appearance was not conclusive owing to the fact that the sample removed was too superficial.

The patient had been treated with iodide of potassium and perchloride of mercury, but with no beneficial result; in fact, the laryngeal swelling had increased during the period the patient had been under observation.

DR. DUNDAS GRANT said he thought there would be general agreement with Dr. Potter's diagnosis in both this and the preceding case, *i e.* that the former was tubercular and the latter malignant.

THE PRESIDENT said that in his opinion this and the previous case were well worthy of notice, especially this case. It seemed to him, though, a very doubtful question whether this could be looked upon positively, or anything like positively, as a malignant condition. The appearance, in the first place, of the ulcer on the tongue, putting aside the question of the laryngeal disease, did not point to malignancy. In the second place, there was a smooth swelling of the right ventricular band, and then on the left side there was a pure white vocal cord. Under the circumstances it was excessively difficult to understand the form of malignant disease which would produce such a state of affairs. On the other hand, he was not prepared with an alternative diagnosis, nor was he altogether inclined to reject the possibility of malignancy. He would, however, rather incline to the specific theory.

MR. P. DE SANTI thought there was a considerable amount of difficulty as to the diagnosis. Taking all the facts into consideration, he rather inclined to the opinion that the laryngeal condition was one of malignant disease, though there were certain points about it which made him very doubtful. The absence of enlargement of the glands was marked, and if the disease was malignant there should by now most certainly be glandular infection, although one did see cases of extrinsic origin where the glands did not become involved until a late stage of the disease. The condition of the tongue was not like malignant disease, and still further lent doubt to the case. On the whole he was inclined to advise the man to have an exploratory thyrotomy done, and in that way one might come to a conclusion as to the condition of the disease itself, and then, if it was thought necessary, the thyrotomy could be turned into a more extensive operation, such as partial or complete extirpation of the larynx, if found to be malignant. There would be no harm in a thyrotomy if carefully performed; indeed, in some of these cases of doubtful malignancy he was of opinion that laryngologists erred in not performing an exploratory thyrotomy more frequently. In grave cases of doubt exploratory thyrotomy would clear up the diagnosis, and if malignant disease were present a suitable operation would give the patient the last chance, in fact the only chance, of cure. In doubtful abdominal cases a surgeon did not hesitate to explore the abdomen, and why should he hesitate with the larynx? If properly performed, an exploratory thyrotomy was a safe operation, and should not affect the voice subsequently.

Specimen of Tuberculosis of Larynx and Trachea of Rapid Course in a Man aet. 67.

Shown by DR. H. SMURTHWAITE. The first laryngeal symptom—slight huskiness of voice, later followed by dysphagia—only appeared some nine weeks before death. In this period weight fell from 12 to 9 st.

Throughout dysphagia was the most distressing symptom—dreaded taking food in any form.

When first seen on December 2nd, 1903, the epiglottis was markedly infiltrated, showing a pseudo-œdematous condition; owing to the pendulous position and swelling a view of the interior of the larynx was not possible, and only the arytenoid cartilages and ary-epiglottic folds could be partially seen; these also showed signs of infiltration.

Superficial necrosis of the lining membrane of the epiglottis and arytenoid cartilages was noted on December 21st, 1904, and rapid destruction of submucous tissues now followed, allowing a full view of the interior of the larynx ten days later. The cords and false cords were now seen to be studded with tubercles. Death took place January 13th, 1904.

Paintings illustrating above changes were also exhibited.

Patient upon whom Radical Operations for Empyemata of Left Frontal, Ethmoidal, and Both Maxillary Sinuses have been Carried Out.

Shown by DR. HERBERT TILLEY. Miss E—, aet. 20, was first seen in consultation, May 22nd, 1902. She complained of a constant nasal catarrh often associated with violent cough. The discharge from the nose was profuse, and as a rule was clear rather than purulent; but after a fresh cold it became purulent. The intonation of the voice was very characteristic of nasal obstruction.

Examination revealed swollen nasal mucosa in both nostrils, a few small polypi growing from the left middle meatal region, an œdematous condition of the corresponding region on the right side. The discharge in the nasal cavities was muco-purulent. Both tonsils were enlarged, and there was also present a considerable adenoid growth.

The tonsils, adenoids, left middle turbinal, and neighboring polypi were removed on May 29th, 1902.

On December 15th, 1902, the patient was again seen on account of the continuation of the nasal discharge, some headache, and the persistence of cough and bronchial catarrh.

Nasal examination revealed a return of the nasal polypi on the left side, and the discharge in both middle meati was more purulent. It was now easy to pass a cannula into the left frontal sinus and to syringe out a small quantity of pus. There was tenderness to pressure upon the floor of the sinus. Both antra were dark upon transillumination, and by intra-nasal exploration were proved to be secreting pus.

January 28th, 1903.—The left frontal sinus was operated upon, the whole of the anterior wall being removed, and a large opening made into the nose, the suppurating anterior ethmoidal cells being destroyed at the same time. Both antra were also drained through the alveoli in the hope that the antral mucosa would recover themselves if the sinus-cavities were drained and frequently irrigated.

On June 5th, owing to continuation of discharge from both antra, the Caldwell-Luc operation was carried out on each side. The sinus-cavities were filled with large polypoid granulations, which were carefully curetted away, the cavities disinfected, and the bucco-antral wound allowed to close. No packing of the antra was carried out.

The results have been entirely satisfactory. The scar on the eyebrow is scarcely noticeable, and examination by means of a suitably curved probe will demonstrate that the original antral cavities are very much diminished in size owing to the growth of granulation tissue, which has become organized and (since there is no purulent discharge) covered with epithelium.

Case of Bilateral, Frontal Ethmoidal Sphenoidal and Maxillary Empyemata Operated upon by Radical Methods.

Shown by DR. HERBERT TILLEY. Patient, male æt. 58, first seen October 23rd, 1901, complaining of some neuralgia over left forehead of six months' duration. The pain was always worse in the morning. There was a profuse purulent discharge of a "fishy" odor from both nostrils, necessitating the use of fifty handkerchiefs a week. He had had polypi removed on a few previous occasions. Examination of the nose showed the middle meati full of polypi and profuse suppuration everywhere. Having cleansed the nostrils of discharge, pus was then washed out of both antra and then again out of the right frontal sinuses. It was impossible to gain access to the left sinus because of the presence of a large nasal spur on the left side of the septum. Finally it could be demonstrated that the ethmoidal cells and sphenoidal cavities were full of pus, the bony labyrinth of the former being very thin and friable. The patient would submit to no radical operation (as was advised) beyond drainage of both antra through the alveoli. Drainage tubes were therefore inserted, and for nearly two years the patient continued to irrigate the antra daily with various mild antiseptic lotions, while from time to time polypi were removed from the higher nasal regions. An increase in the severity and frequency of the headache, as well as a general feeling of ill-health, led him to assent to radical operation last year. On June 2nd both frontal sinuses were opened and the whole of the anterior walls removed, the septic contents curetted away, and large communications made with the nose through the ethmoidal regions, which were simultaneously destroyed with ring knives. Great difficulty was experienced with the left ethmoidal region because of the presence of a large obstructing spur on the left side of the septum, and added to this the patient was very faint and collapsed from the beginning of anaesthesia, and the operation was a very anxious and hurried one.

The interesting features in the after-treatment of the case were two.

1. From the day of the operation no pus could ever be syringed from the antra, showing that they were only acting as reservoirs of pus.

2. The right sinus healed rapidly and the left a great part, but there always remained some discharge issuing externally from its inner and lower angle, while a small amount of the pus could always be syringed from the higher posterior region of the nose.

I concluded this came from the ethmoidal and sphenoidal region, and in September, 1903, under general anaesthesia, the external incision was continued downwards in front of the lachrymal sac to the infra-orbital margin (Killian's incision). Pushing aside the soft parts, the nasal process of the superior maxillary bone was exposed and removed. This at once exposed the anterior end of the lateral mass of ethmoidal cells and provided a splendid view of the diseased cells, which were easily and safely curetted away until the anterior wall of the sphenoid cavity was reached. The patient made an uninterrupted recovery, and is now free from all traces of the disease in the nose. His headaches have entirely disappeared, and his general health is better than it has been for years.

The case illustrates the difficulties which may be offered by an obstructing septal spur and a means of overcoming them.

The scar left by Killian's incision is scarcely noticeable, and the advantages of the method in selected cases are extremely great.

It furthermore shows that a sinus antrum may act for years as a reservoir of pus without becoming itself a generator of discharge, and furnishes an additional argument in favor of opening the higher sinuses before the lower ones when one is dealing with a multiple chronic infection of these cavities.

Chronic Empyema of the Left Frontal, Ethmoidal, and Maxillary Sinuses Treated by Radical Operation.

Shown by DR. HERBERT TILLEY. Mrs. B—, æt. 33, was first seen March 17th, 1903, complaining of temporary attacks of deafness and ringing in the ears, marked nasal obstruction, and an oppressive feeling over the forehead, which rendered her unable to work or enjoy life at all.

Examination revealed purulent discharge from the left middle meatus, polypi in same situation, and pus was syringed from the left antrum and left frontal sinus.

March 27th.—The anterior wall of the left frontal sinus was completely removed and the Caldwell-Luc operation performed on the antrum, which was full of diseased mucous membrane.

Excepting for a temporary diplopia lasting ten days, the patient made an excellent and perfect recovery, and is now free from all nasal symptoms. The scar on the frontal sinus is very slight.

The PRESIDENT congratulated Dr. Tilley on the great success of all these cases, more especially since there was no appreciable deformity resulting from the operations.

DR. VINRACE congratulated Dr. Tilley on the result of the operation in these cases, and on their suitability for the treatment. It seemed to him that there were some cases where this radical operation was required, and these were cases in point. He felt sure that the patient would admit that he was the debtor of Dr. Tilley, and he thought the Society would endorse that view. There was one point to call attention to, and that was that the excellent results might fairly be put down to the operative measures and not to incidental causes, for the circumstances before the operation, as far as he could ascertain, were practically the same as those afterwards. The case had been followed up by ordinary treatment of the mildest nature to start with. Operation had only been resorted to as a last measure, and with desirable results.

DR. FITZGERALD POWELL congratulated Dr. Tilley on the present good results he had obtained in these cases. There was one point, however, to which he was inclined to take exception in Dr. Tilley's remarks, namely, the suggestion he understood him to make that in cases of multiple sinusitis the frontal sinus should be operated on and dealt with first, and afterwards the maxillary antrum, as the latter was only the reservoir for the pus from the frontal sinus, and not itself the seat of suppurative inflammation. In his opinion not infrequently certain conditions existed which made it doubtful as to the seat of the suppuration, and he thought it better to begin exploring the maxillary sinus first, and if necessary go on to the operation on the frontal sinus later.

DR. STCLAIR THOMPSON, having congratulated Dr. Tilley on his successful operations, asked him what was the condition of the sphenoidal sinus before it was opened. Was it, as he had found on the cadaver, easy to reach with Killian's incision from the ascending process of the superior maxilla? Was there much difficulty in dealing with the hemorrhage? The Killian operation was straightforward when performed on the cadaver, but frequently in the living subject the amount of hemorrhage made it difficult. This hemorrhage might be considerably controlled by packing from time to time with strips of gauze saturated with peroxide of hydrogen. He noted that no attempt had been made in these cases to preserve the Killian bridge, and yet the result was aesthetically nearly as complete as Killian himself could obtain. Still, he thought that Dr. Tilley had been lucky in these three cases, because no one knew better the irregularities of the frontal sinuses, and yet in all these cases the sinus did not exceed far towards the outer orbital angle. These cases also showed that the frontal sinus itself was not a complicated matter to deal with. It was the attendant ethmoidal condition which gave trouble. In some cases large fronto-ethmoidal cells ran outwards in the roof of the orbit, forming a sort of a double roof to that cavity; while in others they penetrated far inwards in different directions below the true frontal sinus. It was when one had the misfortune to overlook any of these that complications or inadequate results were apt to follow.

DR. HERBERT TILLEY, in replying to Dr. Powell's remarks, said that all operative procedures presumed that an accurate diagnosis had been made, and in most cases of nasal accessory sinus sup-

puration this was quite possible. In cases of multiple suppuration the nasal cavities should be first cleansed from all pus, then the antra should be explored, and finally the ethmoid and frontal sinus. In this way it was possible to arrive at an accurate diagnosis of the various foci of the suppuration. He was in complete accord with Dr. Thomson's experience as to the value of oxygenated water as a hæmostatic when dealing with ethmoid-cells, and also as to the great importance in the radical operation of breaking down these ethmoidal cells, which spread outwards below the floor of the frontal sinus, and are often separated from the latter cavity by a very thin septum of bone. Dr. Tilley thought that the overlooking of these cells accounted for many cases of recurrent suppuration.

Case of Nasal Sinus in a Girl.

Shown by DR. W. H. KELSON. A girl, æt. 20, had suffered from about eighteen months from a sinus situated about an inch from the tip of the nose in the middle line. A probe could be passed upwards for about half an inch; but no bare bone could be felt, nor did the sinus appear to communicate with the nasal cavity. There was the history of a severe injury to the nose at three and a half years of age. The discharge was scanty, but appeared to be pus.

The PRESIDENT remarked on the interest of the case. Had a probe been passed and anything been felt?

DR. KELSON said that he had passed the probe, which went half an inch upwards. It did not strike bone or enter any cavity.

Case of Ulcer of the Tonsil, Probably the Primary Lesion, in a Young Woman with Well-marked Cutaneous Syphilide.

Shown by DR. DUNDAS GRANT. A. P.—, æt. 19, the wife of a policeman, suffering from sore throat of six weeks' duration, was first seen on February 25th at the Central London Throat and Ear Hospital, having been four weeks under treatment elsewhere for diphtheria. The right tonsil was the site of an excavated ulcer on an inflamed, slightly indurated base. The floor of the ulcer was of a light grayish color tending to opalescence, irregular and shiny; the margins were also opalescent. On the left tonsil, which was not enlarged, there was an indistinct mucous patch. The glands at the angle of the right jaw were greatly enlarged, the corresponding ones on the left side to very much less extent. When seen there was a well-marked rash, characteristic syphilide, on the arms and other parts of the body; there was a history of ulceration on the labia. The specific nature of the affection seems undoubted, and the nature of the ulceration on the right tonsil with the bubonic enlargement of glands at the right angle of the jaw seems to indicate that the lesion in this region is a primary one.

MR. P. DE SANTI said that the woman was suffering from syphilis. There was nothing in the tonsil at present to indicate a chancre—its condition was certainly not typical of Hunterian sore. How long was it since the trouble came? [Dr. Grant: "Six weeks ago, not six

months as mentioned." It might have looked so before the appearance of the case altered. [Dr. Grant said that the case had improved under a course of mercury."]

DR. KELSON thought there might be a different interpretation, viz. that the enlarged glands and tonsillar ulcer were connected with the severe attack of diphtheria patient had recently passed through, and that the syphilis from which she was suffering might have been acquired in the usual way.

Case of Extreme Laryngeal Edema in a Male Adult, probably Secondary to Tertiary Specific Lesion; Treated by Mercurial Inunction and Local Incision; Nearly Recovered.

Shown by DR. DUNDAS GRANT. Robert G—, æt. 28, a policeman, first seen on January 28th, 1904, on account of hoarseness and soreness of the throat. The voice suggested the presence of a swelling in the throat. There was fulness in the submaxillary region; the affection was of fourteen days' duration; the voice was hoarse; there was very little pain. On laryngoscopic examination there was found the most enormous œdema of the right ary-epiglottic fold, extending from there on to the corresponding wall of the pharynx and involving the right half of the epiglottis; this was of a pale white tint. The right vocal cord was seen only to a very small extent, and was quite immovable. From the absence of constitutional disturbance it was assumed that the œdema was secondary to some other lesion. A history of primary specific infection six years previously was elicited, and the diagnosis made of gummatous perichondritis with conservative œdema. For a week he was ordered simply a vapor of creasote, but after that time a mixture containing biniodide of mercury. He was ordered to come into the hospital for inunction. This was carried out, and at the end of a week the patient was more comfortable, but the œdema was still very extensive. A portion of the œdematous tissue was nipped out to relieve tension. Microscopical examination revealed infiltration with small round-cells. Rapid diminution followed this, although the inunction had to be interrupted on account of a certain amount of stomatitis having taken place.

DR. GRANT said that his second case, in its enormous degree of œdema, resembled Dr. Thompson's case. The œdematous tissue formed a big "floppy" mass. With regard to the first case—the young woman with the tonsillar ulcer—there was no question as to secondary syphilis. It would be difficult to account for those enlarged glands on the right side of the angle of the jaw unless they were buboes connected with a primary lesion on the tonsil. That lead him to form the idea that the great crater on the tonsil was a primary syphilitic ulcer. Were we to expect such a degree of induration as in a Hunterian chancre of the prepuce? On the lip the induration might be very slight indeed, and he did not think they must expect the same degree of induration on the tonsils as would be found in typical chancres in some other parts.

Man, act. 32, with Adhesions of the Soft Palate to the Posterior Pharyngeal Wall.

Shown by MR. ATWOOD THORNE. The case was first seen two years ago, when there was only a pin-hole opening between the mouth and the naso-pharynx. The history at the time was that the man had been under treatment for three years, that during all the time he had been taking iodide and mercury because whenever an attempt was made to dispense with these he suffered from a superficial ulceration involving the gums, inside of the cheeks, and tongue. For the same reason, antisyphilitic treatment has been obliged to be continued all the time he has been under Mr. Thorne's care. The great interest of the case is this: when first seen the opening in the adhesions was a mere pin-hole, and various methods of operation were discussed; instead of closing the opening has without operative interference got larger month by month, apparently by contraction of the adhesions towards their fixed points in the periphery.

The PRESIDENT said Mr. Thorne wished to know whether it was desirable to interfere with the condition.

MR. DE SANTI thought there was no necessity for any operation in this case. The patient seemed quite comfortable, and it had now been laid down that any operation for the separation of adhesions of the soft palate to the pharynx, which were very extensive, should be done under special circumstances, such as intense pain round the mastoid region. Two cases of this particular operation of separating the soft palate and pharynx with good results had been shown to the Society. The first was described and shown by Mr. Spencer, and he himself had shown the second case. In every case on record of this operation the indications were vastly greater than any that were present in this case. It was best to leave the patient alone.

Dr. F. POWELL also thought it best to leave the patient alone. So far as these cases were concerned, he had an idea that none of them were very successful, owing to retraction having taken place and the palate receding to its old position. [Mr. de Santi expressed his willingness to bring his case forward to convince Dr. Powell of his misunderstanding.] He remembered that at a previous meeting of the Society it was generally considered that these were never satisfactory cases for operation, retraction always taking place sooner or later.

MR. A. THORNE said he had no idea now of operating. He showed the case as illustrating a form of centrifugal dilatation. The opening was at first as small as a pin's point and had now become large enough to admit the tip of the little finger.

Case of Corditis Tuberosa in a Young Woman not a Singer or Professional Voice User.

Shown by Mr. R. LAKE.

Dr. STCLAIR THOMSON said it was very interesting to see the condition of singer's nodule in a woman who was not a singer nor much of a speaker. The only point worth mentioning was that the patient was in daily contact with someone who was deaf, and she consequently had to raise her voice, though not to any great extent. These two nodules were similar to those which occur sometimes with those who overused or misused the voice, and it was rare for them to occur in a person not a professional voice user.

Case of a Tubercular Ulcer of Left Vocal Cord.

Shown by Mr. R. LAKE. The patient, a young woman æt. 23, was exhibited to show a peculiar ulcer on the left vocal cord. This was situated at its extreme edge, and came to a sharp point at either end, with its widest part in the middle. She had been treated in a hospital for other laryngeal trouble, and had more or less recovered before she left. At one time a large swelling of the left arytenoid yielded rapidly to frequent paintings with 10 per cent iodine vasogene.

Dr. HERBERT TILLEY asked Mr. Lake if he still used applications of lactic acid for superficial tuberculous ulceration of the larynx.

Dr. LAKE, in reply to Dr. Tilley, said that he had for a long time given up using lactic acid except as a vehicle; this patient was, as an in-patient, almost cured with injections. Now, as an out-patient, she could only be treated once a week. The following solution was one he had used for two years for cases with ulceration:—10 parts of carbolic acid, 10 parts of commercial formalin, 50 parts of lactic acid, 30 parts of water.

Case of Swelling of Right Ventricular Band in a Male æt. 34.

Shown by Dr. FITZGERALD POWELL. This man came under observation on February 2nd. He complains that ten weeks ago he lost his voice; this has continued more or less up to the present. He has no pain. There is no loss of flesh; no night-sweats. No history of syphilis. No evidence of tubercle in his chest.

On examination the right ventricular band is seen red and swollen, and on the anterior margin of the right cord a small papillomatous-like growth is observed on phonation.

Dr. STCLAIR THOMSON suggested that it was syphilitic.

Dr. POWELL said he had put the patient on antisyphilitic treatment for a fortnight—iodide of potash and mercury—but no improvement resulted. At present he was having simple soothing remedies.

Case of Sequestrum from the Nose in a Man æt. 38.

Shown by Dr. FITZGERALD POWELL. Male æt. 28, tailor. This man came to the hospital complaining of discharges and offensive odor from the nose, especially the right nostril. He had syphilis in 1900, and was invalided from South Africa.

In February of 1900 he noticed a swelling on outside of nose, and both nostrils were completely blocked.

In May, 1902, was treated at the London Hospital, he thinks, for abscess of nasal septum for about two months. From August to November, 1902, he had enteric fever.

On examination a large sequestrum of dead bone was seen in right nostril. The nose had fallen in somewhat, and the septum was perforated. Dr. Powell made an attempt to remove the sequestrum, but had to desist, as it was too painful; and on February 13th he had a general anæsthetic, and the specimen now shown was removed from his nostril.

Professor A. Robinson, of King's College, who kindly examined the specimen, pronounces it to be the "premaxilla," the grooves for the incisor teeth being apparent.

It is interesting to observe that the patient's incisor teeth are still present and firmly fixed, evidently in callus or new bone thrown out to replace the sequestrum.

Dr. WILLIAM HILL said he had no doubt when this specimen was first passed around that it was generally accepted as a sequestrum formed of the premaxillæ. As a matter of fact, it was nothing of the kind, for on examination of the patient it was seen that the *incisive* or premaxillary portions of the maxillæ were present and normal, and carrying firmly fixed teeth. It was probably evident to all that the sequestrum shown was shed from the palate posterior to the premaxillary area, from the region of the anterior palatine canal. This area, a favorite spot for syphilitic necrosis and perforation, might be conveniently described as the Stensonian segment, and it was interesting to remember that a separate center of ossification was now described for this region (vide Cunningham's 'Anatomy,' 1902). He (the speaker) had shown a real case of a premaxillary sequestrum before the Society some years ago in a child, and it was scarcely necessary to add that the sequestrum was removed through the mouth. How a true premaxillary fragment could wander into the nose was somewhat difficult to imagine.

Mr. THORNE asked if the so-called tooth-sockets were really the sockets of teeth or not? He understood that the premaxilla bore the four incisor teeth, and in this case we are shown what purports to be the premaxilla while the teeth are firmly fixed in the mouth.

Dr. HERBERT TILLEY said he was entirely in accord with Dr. Hill's remarks. Last year a patient applied to him with very swollen upper lip, great inflammation and swelling of the gums around the upper central incisors, and a fetid purulent discharge from the nose. The incisor teeth were so loose they could be removed with the fingers and under a general anæsthetic a sequestrum corresponding to the sockets of the incisor teeth was easily removed.

Dr. FITZGERALD POWELL thanked Dr. Hill for the interest he had taken in the cases and his determination to clear up the origin of the specimen shown. He had been himself rather doubtful on this point, and had shown it to several anatomists, who gave various opinions. Professor Robinson, of King's College Hospital, was good

enough to examine it, and pronounced it to be the premaxilla. He took this opinion without question, the more so as it coincided with his own. The specimen carried the grooves for the two upper incisors, and he had seen cases of mal-development in children in which this premaxilla, carrying the incisors, had not joined the superior maxillary bones, but protruded forward, and had to be removed or pushed back into position. It appeared to him that it did not make matters clearer to say "it was not the premaxilla, but the Stensonian section of it." He could not quite follow Dr. Hill's description as obtained from the 'Anatomy' he was quoting, but he was not prepared to deny its accuracy.

Case of Edema and Stenosis of the Larynx for Diagnosis.

Shown by Dr. H. J. DAVIS. This man, æt. 28, has œdema and stenosis of the larynx, the glottis at one time being a mere chink, and the œdema extreme. He was admitted into the Middlesex Hospital three weeks ago with urgent dyspnœa, but this has subsided. The arytenoids and epiglottis are still enormously swollen, and between the arytenoids a translucent, œdematous mass of raised mucous membrane "flaps up and down" during inspiration. It has a peculiar appearance, and resembles a large mucous polypus; it extends below the cords.

Ten months ago the patient had primary syphilis, and he was still undergoing treatment when these urgent symptoms supervened.

Is this a case of acute œdema resulting from syphilis alone? or is it a case of mixed infection (tubercular and syphilitic)? There are no physical signs in the chest indicative of phthisis.

The PRESIDENT said the case was specially noteworthy considering the relatively short time the symptoms had been present. He presumed the kidneys and heart were all right, and that there was no evidence of any circulatory obstruction about the neck.

Dr. D. GRANT said that this case was comparable to the first case shown by Dr. Powell at that meeting. In the case he himself had shown the œdema was more unilateral, but it had the same "floppy" character, and he should think that this case, like his, was one of œdema consecutive to a syphilitic lesion, probably perichondritis. A nip with punch-forceps out of the middle of the mass in his own case seemed to hasten the improvement enormously.

Dr. H. L. LACK agreed that it was almost certainly a case of syphilis. A patient he had shown at the last meeting of the Society with undoubted syphilitic lesions had similar great œdema of the larynx, and there was a large flapping mass attached to the arytenoid. As regards, treatment he should recommend the immediate removal with cutting forceps of the large movable piece of œdematous mucous membrane. This would probably reduce the whole of the œdema.

SELECTED ABSTRACTS.

Mechanism of the Paroxysmal Neuroses. Asthma.—FRANCIS

HARE, (Queensland)—*Australas. Med. Gazette*, Aug. 20, 1903.

Hare remarks that although most modern writers hold to the theory that the phenomena of asthma immediately depend upon a spastic contraction of the fibre-cells of organic muscle, which minute anatomy has demonstrated to exist in the bronchial tubes, yet not a few still prefer the hypothesis that the mucous membrane of the tubes becomes very rapidly swollen by what the German writers term a "fluxionary hyperæmia," or, as Weber put it, by a dilation of its blood vessels through the influence of the vaso-motor nerves.

This is the hypothesis of Sir Andrew Clark and Osler, and it is the hypothesis which Haré finds he is inevitably compelled to select. Under it the vaso-dilation is, he holds, as in migraine, the compensation for vaso-constriction elsewhere; or it may be, as there are reasons to believe of some cases, that the vaso-dilation is primary and the vaso-constriction secondary and compensatory, and the dyspnœ of asthma becomes the true analogue of the headache of migraine.

Vaso-Constriction. The widespread area of vaso-constriction is found to occupy practically the same regions in asthma as in migraine. The pallor, anæmia, and the sense of coldness, subjective and objective of the surfaces, especially of the extremities, during severe asthmatic paroxysms have been noted by most observers.

Cardiac Inhibition. Many writers refer to the fact that the pulse is slowed during a fit of asthma. It is an inconstant phenomenon. Its absence precludes cardiac compensation for the widespread vaso-constriction we know to exist; we are led, therefore, to search for some compensating area of vaso-dilation, and our attention is obviously directed to the bronchial mucosa.

Vaso-Dilation. That vaso-dilation occurs in the bronchial area is probable from many observations and on many grounds. Storck actually observed with the laryngeal mirror that in certain instances of asthma the whole length of the trachea and part of the right bronchus were deeply congested.

Observations Constituting Circumstantial Evidence in favor of the Vaso-Motor Theory.—On the hypothesis that swelling of the mucous membrane due to the vaso-dilation, correlative of vaso-constriction elsewhere, is the proximate cause of the dyspnœa, we can explain most of the observations which have been made concerning asthma. Everything which tends to reduce the swelling of the mucous membrane in the affected area will tend to relieve the dyspnœa, and conversely.

The swelling might be reduced: (1) by increase of the mucous secretion. (2) by vaso-constriction in the affected area. (3) by vaso-dilation elsewhere or generally. (4) by reduction in the force of the heart beat, and (5) by reduction in the total amount of blood in the circulation.

On the other hand, the swelling might be increased: (1) by decrease of the mucous secretion, etc., all the converse conditions.

Hare then gives the clinical facts corroborative of the above propositions, and they afford interesting reading of practical value.

NOLAN.

Preliminary Note on the Treatment of Lupus of the Respiratory

Passages by Radium—DELSAUX—*Arch. internat. de laryngol. d'otol. et de rhinol.*, Paris, Sept.-Oct., 1903, No. 5.

After a dissertation on the history of radium, the author describes an apparatus which he has constructed, and reports a case in which the use of radium resulted in marked amelioration of lupus of the larynx.

W. SCHEPPEGRELL.

"Colds in the Head" Their Prevention and Cure.—WALTER A.

WELLS. (Washington)—*Washington Medical Annuals*. Jan. 1904.

Instead of dealing with a rare and complicated disease, the author has advanced his excellent advice upon a subject, which, though it is by far the most wide spread of all diseases of the respiratory tract, is least discussed by medical writers and its dangers underestimated. Its greatest danger lying in the insignificance attached to it. In writing of the causes he refers to the inhalation of irritating fumes and vapors. As a complication of the infectious fevers, and as a result of direct inoculation. The exciting causes he gives as the variance in barometrical and thermometrical states of the atmosphere, carelessness in dress and negligence of the general laws of hygiene. He condemns the various forms of throat and chest wearing apparel, such as boas, mufflers, chamois vests, etc., because of their likelihood to increase susceptibility.

The author believes in beginning early in childhood to accustom the individual to the adversities of weather and insists that the only true way of "hardening" one's self is in a strict observance of the laws of personal hygiene. Among these, he emphasizes, daily open air exercise, proper attention to gouty diathesis if present; careful selection of a diet and limitation of all excesses, properly heated rooms, clothing in proportion to weather conditions, and most important, cold water bathing. The author describes the method used to safely accustom the patient to the cold bath. He goes exhaustively into the treatment, during the several stages, and advises correction of any intra-nasal condition which lessens the normal powers of resistance of the nasal mucosa.

The monograph is able and instructive, and should stimulate an interesting discussion upon this important, much-neglected disease.

M. A. G.

A Case of Tracheal Ozena with Tendency to Asphyxia.—G.

DUPOND (Bordeaux)—*Rev. Heb. de Laryngol. D'Otol. et de Rhin.*, Sept. 26, 1903.

The crusts collected in the trachea in such quantities that they formed the appearance of a large tumor. Apparently, a sort of tolerance was gradually set up in the mucous membrane of the trachea, so that the accumulated crust caused no great irritation until a tendency to asphyxia developed.

Treatment consisted in syringing mentholated oils directly into the trachea, the internal administration of expectorants, and improving the function of nasal respiration. This was done by injecting paraffin into the shrunken turbinals, and careful syringing of the nasal passages.

W. SCHEPPEGRELL.

Two Cases of Foreign Bodies in Young Infants—Mm. BOULEY

ET GASNE—*Ann. d. mal. de l'oreille, du larynx, du nez et du pharynx*, Paris, Sept., 1903, No. 9.

The first case reported was a child of 18 months which had been tracheotomized 15 days before being seen by the author. It had swallowed a piece of a cork stopper. When an attempt was made to remove the canula, violent dyspnoea developed, making it almost impossible to remove the canula. An examination was made with the canula and sound devised by Boulay but nothing was found except some granulation tissue which was curetted several times. On one occasion, while the catheter was being inserted, there appeared at the opening of the canula a bloody mass which blocked it completely. It was a piece of cork 7 mm. long and 5 mm. in width and thickness. Bronchial pneumonia developed, but was followed by a rapid cure. The canula was removed a month later without difficulty.

The second case was a child 23 months old, which had swallowed a large mouthful of fish. Immediate dyspnoea followed accompanied by cough and vomiting. The next day about six o'clock in the morning, marked cyanosis developed, the voice becoming extinct. A median tracheotomy was at once done. Eight days afterwards, an attempt was made to remove the canula, but was found to be impossible. Three weeks later the case was first seen by Dr. Boulay. He inserted the canula, applied his sound, and succeeded in removing on the first attempt, a vertebra of fish, six to seven mm. in diameter.

The diagnosis of a foreign body in the respiratory passage of young children is not easy. It is first necessary to decide whether the larynx or trachea is involved and what is the nature of the obstruction. In very young children laryngoscopy is useless. Radioscopy or radiography is of use only when the foreign body is metallic. Tracheoscopy is also doubtful. With the Boulay canula and sound, we can arrive at a certain diagnosis. The fenestrated canula moreover makes it possible to remove the foreign body by means of forceps.

W. SCHEPPEGRELL.

The Telephone as an Aid to Hearing.—D. B. ST JOHN ROOSA—
Post-Graduate, February, 1903.

The author states that the condition in which this improvement occurs is one of the diseases of the middle ear. Those who have disease of the acoustic nerve, fortunately rare cases, are injured rather than assisted by the use of the telephone and in no case is their hearing improved by the use of this instrument. The cause for this improved hearing in certain cases, is perhaps to be found in the increased vibration of the membrana tympani, caused by the rapid action of the sound waves upon the drum head.

This instrument put on the market by Mr. Hutchinson in New York called the Acouphone is constructed very much like the telephone. The apparatus consists essentially of a transmitter and electric wires connecting with it and two receivers. The wires being supplied by a battery.

E. D. L.

Chronic Maxillary Sinusitis.—M. CLAUÉ.—*Revue Heb. de Laryng., D'Otol. et de Rhinol.; Soc. de méd. et de chir. de Bordeaux*, Sept. 26, 1903.

Claoué describes three cases in which he operated by a large resection of the lower part of the nasal wall of the sinus. He prefers this method to that of Caldwell-Luc, as he believes that it is not the minute curetting of the cavity but thorough drainage which is the important feature in the treatment.

Brindel has collected some of the cases of maxillary empyema treated in the clinic of Professor Moure, of Bordeaux, in the last three years, which shows that of 144 cases, 20 (about 14 per cent) were cured by *simple medical treatment*.

(The curability of a certain number of cases of chronic maxillary sinusitis, without operation, is an interesting item as there are still some who believe that only surgical intervention is to be considered in such cases. Even in empyema of the frontal sinus, this should be given a reasonable trial. In a discussion of this subject before the section of Laryngology and Otology of the last meeting of the American Medical Association at New Orleans, Fletcher Ingals referred to a case of suppuration of the frontal sinus which he cured by a 4 per cent solution of protargol, after suppuration had continued for ten years. The man had been under his care for some time, but had refused operation. This case convinced him that by antiseptics we can frequently cure these cases with operation.)

W. SCHEPPEGRELL.

General Septic Infection of Nasal Origin.—A. LOGAN TURNER—
Edin. Med. Journ., March, 1903.

The author draws attention to the possibility of general septic infection arising from an intra-nasal lesion which may be easily overlooked. The symptoms may suggest the existence of such conditions as ague, typhoid fever or pulmonary phthisis. The causal factor in the nose may be a very slight one, or a more serious lesion may exist without the patient being aware of it.

A. LOGAN TURNER.

Hay Fever.—E. B. GLEASON.—*Internat. Med. Magazine*, July, 1903.

The author considers three factors in the causation of an attack of hay fever; the absence of any one of which is sufficient to prevent an attack. The three factors are the presence of an external irritant. A pathologic condition of the nasal chambers and, most important of all, a diseased or irritable condition of certain nerve centers giving rise to a train of near and remote symptoms by reflex action. The author has noticed the presence of large amounts of oxilate of lime in the urine of hay fever subjects and by the employment of a few drops of the concentrated nitro-muriatic acid, in water, the crystals in the urine disappear and with their disappearance the hay fever symptoms lessen.

STEIN.

Immediate and Remote Effects of a Median Thyrotomy made in**Search of a Foreign Body in the Larynx.**—M. SUAREZ DE

MENDOZA.—*Arch. internat. de laryngol., d'otol., et de rhinol.*, p. 642, 1903.

In the case reported, a thyrotomy was done for an imaginary foreign body. Two months later, there was still aphonia due to a small mass of tissue located in the anterior commissure of the vocal cords. The tumor was removed by means of fenestrated forceps. The patient was unable to sing, however, as the vocal cords could not be brought into juxtaposition during phonation. In the case of professionals, thyrotomy should, if possible, be avoided.

W. SCHEPPEGRELL.

Congenital Imperforate Auricular Canal; Operation; Cure—

M. COMPAIRE, de Madrid.—*Ann. d. mal. de l'oreille, du larynx, du nez et. du pharynx*, Paris, 1903, p. 352, Oct. 10, 1903.

When first seen the child was 26 days old. In place of the opening into the external canal of the right ear, there was a sort of membranous pocket.

Two years later, when it was shown that some degree of hearing existed on this side, a crucial incision was made into the obstructing membrane, the four flaps resected, and the canal packed with gauze until cicatrization had taken place.

W. SCHEPPEGRELL.

The Mechanical Problems of Intubation.—B. F. GILLMOR (Creston, Ia.)—*Med. Herald*, Dec. 1903.

A clearly written and profusely illustrated paper intended and written "particularly for the man who has never done intubation."

It may be especially commended for the lucid descriptions, carefully illustrated by photographs and drawings, of the proper management of the instruments, and the anatomical and other obstacles to be anticipated and met. The author closes with the observation that the beginner should know "that intubation is no plum to be knocked with a stick from the tree of knowledge into the pocket of his accomplishments; yet he should be open to the conviction that what others can do he can do."

EATON.

Two Cases of Fracture of the Larynx.—M. L. MICHEL.—*Soc. de méd. de Nancy*, Dec. 10, 1902.

The first was a man of 26 years, who had a fracture complicated with a marked subcutaneous emphysema. Cure resulted without surgical intervention. The second patient, a man of 40 years, died in spite of tracheotomy from a pulmonary congestion. He had a fracture of the thyroid with a large tearing of the crico-thyroid membrane and luxation of the laryngeal cartilages.

W. SCHEPPEGRELL.

The Use of Hypodermic Injections of Pilocarpine in Grave Cases of Edema of the Glottis.—M. SUAREZ DE MENDOZA (Paris)—*Revue Heb. de Laryng., D' Otol. et de Rhinol.*, July 4, 1903.

In a case of acute laryngitis complicated with œdema of the glottis, the author made use of pilocarpine. After the third injection, the difficult respiration commenced to improve and a cure rapidly followed.

W. SCHEPPEGRELL.

Injection of Antidiphtheritic Serum as a Means of Treatment in Stomatitis Aphteuse.—DE MONACO.—*Semaine méd.*, No. 6, p. 52, 1903.

The author cites a case of aphtous stomatitis which had resisted treatment by permanganate of potash and nitrate of silver, which was cured by one injection of antidiphtheritic serum. Other investigators such as Sangiovanni, Gaspardi and Santi have already made use of this method.

W. SCHEPPEGRELL.

The Gargle as a Therapeutic Agent.—LAVRAND, (Lille)—*Rev. Heb. de Laryng. D' Otol. et de Rhinol.*, Sept. 1903.

Since the gargle was condemned by Sauger in 1899, it has been comparatively little used by the profession. Lavarand concludes from his experiments that it should be given its place as a therapeutic measure. A small mouthful of the liquid should be taken, and the head thrown back so far that the mouth is almost on the vertical line with the œsophagus. The jaws should be opened as wide as possible, and the act of deglutition made, or the words *ha, ha* pronounced in the most guttural tones possible.

W. SCHEPPEGRELL.

The Treatment of Papilloma of the Larynx in Children.—J. E. SUMMERS, JR. (Omaha).—*N. Y. Med. Journ.*, Aug. 22, 1903.

The author reports three cases cured by tracheotomy. In one of the patients, two years of age, two thyrotomies were performed without success, and the child's condition was cured after the tracheotomy without other local treatment.

In conclusion the observer remarks that tracheotomy is the most available remedy for papilloma of the larynx in children; intubation is a failure, and the justifiability of laryngotomy is questionable.

M. D. L.

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